230655

NEW-YORK FARMER
AND
Horticultural Repository.

VOL. 3.] NEW-YORK, JANUARY, 1830. [NO. 1.

[For the New-York Farmer.]

ART. I.—*Remarks on the Oaks of the State of New-York.* By LEWIS C. BECK, M. D. of Albany, New-York.

Trees, whether individually or in groups, have ever been considered objects of peculiar interest. The grove is associated with the earliest records of science; and among physical objects, the forest may be considered as exerting the most important influence upon the moral world. This idea is beautifully illustrated by Humboldt in his *Tableau de la Nature.* "The species of animals," says he, "are comparitvely few in number, and their fleetness is in general such as to remove them quickly from our sight. Vegetables, on the contrary, act upon our imagination by their immobility and by their grandeur. Their size indicates their age, and it is in vegetables alone that with this age is associated the expression of a force which is constantly renewed. The gigantic dragonnier, *(Dracæna draco)* which I have seen in the Canary Islands, is sixteen feet in diameter, and enjoying an eternal youth; bears still its flowers and its fruits. When the Bethencours, French adventurers, made, in the 16th century, the conquest of the Fortunate Isles, the dragonnier of Orotava, as sacred to the natives of these Islands as the Olive of the citadel of Athens, or the elm of Ephesus, was as colossal in its dimensions as at the present time. In the torrid zone, a forest of Casalpinia and of Hymenea is perhaps the monument of a thousand years."

Though we cannot boast of such "monuments" as these, the oaks of our forest are known with tolerable certainty to attain the ages of 8 or 900 years, and are the most aged trees that we possess. The pines are stated by Dr. Williams, in his History of Vermont, to be often from 350 to 400 years. This information is obtained by counting the number of concentric layers or rings, a method of computation, the accuracy of which is admitted by a large majority of vegetable physiologists.

There is another consideration which renders an attention to our forest trees of high importance. In various European countries, not only individuals, but governments themselves have bestowed great care upon the cultivation of useful and ornamental, indigenous and foreign trees. Their destruction has been guarded by the most rigid enactments, and the highest favors have been conferred upon their most successful cultivators. Without wishing to see such examples in all respects imitated in our own country, it is worthy of attention whether we are not too prodigal of the abundance which we now possess. Whether it is not time to stop, or at least, check the improvident and indiscriminate destruction of our forests. Whether it is not time to cultivate instead of destroying, and thus to keep open one great avenue to national wealth and independence.

For the great purposes to which timber is applied, a large part of Europe must be tributary. We, on the contrary, possess within our extended domain, timber for almost every use. With care, the supply can be continued. The forest can be pruned like the vineyard, or shrubbery. That man would be deemed a madman, who should destroy the young and thrifty trees of his nursery, and yet where is the place in which the same madness is not exhibited with respect to our forests? The effect is already sufficiently evident in our populous towns, and if the practice is continued, it will soon become general throughout our country.

I have elsewhere remarked, that a great peculiarity in the vegetation of the United States, is the number and beauty of its forest trees.* The number of these at present known, is about 200, which have a more or less extensive range of distribution. Some, as for example, the Magnolias are exclusively natives of the Southern section; some, as the Willows, are mostly found in the northern; and some again are common to both.

The oaks, comprized under the Linnean genus *Quercus*, are by far the most numerous and important. Botanists are at present acquainted with more than one hundred and forty species of this genus, of which upwards of one half belong to America. In the State of New-York, there are fifteen native species, which I shall now briefly notice.

1. Quercus Olivaformis. *Michaux. Mossy-Cup Oak.*

This species is credited by Michaux to the banks of the Hudson River above Albany, and also to the Gennessee Country; but it is represented to be very scarce even here. In colour the leaves resemble the White Oak, but they greatly differ from it in form. The cups of the acorns are covered with prominent and reversed scales to which the species owes its name. It is said to be from 60 to 70 feet high.

Although I have made diligent search for this tree, I have never been able to find it; nor can I learn that any botanist has detected it on the Hudson since Michaux. Pursh credits it to the Western part of the state.

2. Q. obtusiloba. *Michaux. Post Oak.*
Q. Stellata. Wildenow.

This is a tree of middling size, found in the Southern parts of the state. It is, however, most abundant farther South, as in Maryland and Virginia. It may be known by the peculiar disposition of its branches. The texture of its wood is much finer than that of the White Oak, and on account of the oblique disposition of its branches it is employed for making the knees of ships. A great preference is also given to the staves made from this oak in consequence of the closeness of the grain.

* Geographical Botany of the United States,—published in the Transactions of the Albany Institute.

FEB 23 1932

Michaux strongly recommends the cultivation of this tree both in Europe and America. It grows upon the lightest soils, and though of secondary size, is not exceeded by any other in value.

3. Q. alba. *Michaux. White Oak.*

From the color of its bark this tree has almost every where received the name of White Oak, and it is very common in our state. It bears a great resemblance to the European Oak, both in its foliage and in the qualities of its timber. It grows from 50 to 60 feet high and from five to seven feet in diameter; these proportions, however, vary much, according to the nature of the soil and climate.

The timber of the White Oak is very extensively employed. It is very strong and withstands for a long time the progress of decay, and affords pieces of very large dimensions. Wherever strength and durability are required this timber is preferred. It is much used in ship-building, and in the form of staves it forms an important article of export.

4. Q. bicolor. *Willdenow. Swamp White Oak. Q. prinus discolor. Michaux.*

This species, although found in various parts of this state, is by no means so common as the White Oak; it grows only near swamps, or in damp ground, and attains the height of 60 or 70 feet. The leaves are large, toothed, but not pinnatifid as in the common White Oak; their under surface, moreover, is of a silver-white, forming a striking contrast with the tint of the upper surface, and hence the specific name which it has received is peculiarly appropriate.

In the large trees the grain of the timber is fine and tolerably compact; it possesses great strength and elasticity, and the valuable property of splitting easily in a straight direction. It is used for the same purposes as the White Oak, but is no where found in sufficient quantity for the demand. Its cultivation is an object worthy of the most attentive consideration, especially as it flourishes in swampy grounds, which are now occupied by trees of far less value.

5. Q. prinus. *Willdenow. Swamp Chesnut Oak. Q. prinus-palustris. Michaux.*

This tree is occasionally met with in our woods, but is not so common as many other species. To the South it becomes more abundant. According to Michaux, it acquires its greatest luxuriance of growth in the lower and maritime parts of the two Carolinas, of Georgia and East Florida, where it is more common than in the other Atlantic States.

The Swamp Chesnut Oak is frequently confounded with the Rock Oak, from which it differs in the form of its leaves and acorns. It is generally found in low grounds, and in our latitude seldom exceeds fifty feet in height. As its wood has a less firm texture than the common White Oak its use is quite limited.

6. Q. castanea. *Willdenow. Yellow Oak. Q. prinus acuminata. Michaux.*

So far as I am acquainted with this tree, it is to be considered very rare in this state. I have occasionally seen solitary individuals near Troy and also in the more Northern parts of the State. It is, however, no where so common as many other species. The environs of Lancaster in Pennsylvania, are said to present the finest locality.

The Yellow Oak is a fine tall tree, with oval lanceolate leaves, which are regularly indented, green above and whitish beneath. The bark is smooth and whitish, and the timber has a yellowish color. It grows only in the most fertile soil;—its timber is not particularly valuable.

7. Q. montana. *Willdenow. Rock Chesnut Oak. Q. prinus monticola. Michaux.*

This species is occasionally met with in various parts of the Northern and Middle States, but has not a very extensive range. It is frequently found on the Mohawk and Hudson, and extends North to the banks of Lake Champlain. With us it is most commonly known by the name of Rock, or Rocky Oak, but in Virginia it is generally called Chesnut Oak.

The bark of the Rock Oak is hard, thick, and deeply furrowed; and it is highly esteemed by the tanner. The timber is reddish, like that of White Oak, but it is heavier. It is considerably employed in ship building, and next to hickory it is deservedly most esteemed for fuel.

The cultivation of this valuable tree is deserving of great attention; it grows in stony soils and in situations for the most part uninhabitable.

8. Q. prinoides. *Willdenow. Dwarf Chesnut Oak. Q. prinus chincapin. Michaux.*

This species grows from three to five feet high and frequently passes under the name of Scrub Oak. Though it is occasionally met with in various places, it is most abundant in barrens where associated with the pines. In the neighbourhood of this city and west to Schenectady it abounds, evincing at once the natural sterility of the soil. It is also found in a similar tract of country near Fort Edward on the Hudson.

The diminutive size of this species prevents it from being of much use as timber; yet its fructification is abundant and might be used as food for cattle.

9. Q. phellos. *Willdenow. Willow Oak.*

The long, narrow, and entire leaves of this tree, so much resemble those of the Willow as to render the common name which it bears peculiarly appropriate. It grows only in the Southern part of the State, but is not abundant until you reach Virginia and the Carolinas. It is most generally met with in moist soils and frequently on the borders of marshes.

The timber is coarse and cannot be converted to any valuable use. The species, therefore, is not deserving of particular attention from the agriculturist.

10. Q. illicifolia. *Willdenow. Black Scrub Oak. Q. canisteri. Michaux.*

This little shrub is quite common in various parts of our State. Michaux remarks that it does not grow singly in the midst of the forests, it is not even intermingled with other shrubs, but it grows only in certain parts where it covers exclusively several hundred acres. It is, however, not unfrequently found in company with the Dwarf Chesnut Oak, which is particularly the case upon the sand plains in the vicinity of this city.

This species is seldom above five or six feet high, has a smooth bark, and leaves divided with considerable regularity into three or four segments. Like the Dwarf Chesnut Oak, it is furnished with an abundant fructification, and like it, also, is an evidence of the sterility of the soil.

11. Q. tinctoria. *Willdenow. Black Oak.—Quercitron.*

This tree is very abundant in all the forests of this State, and is, with few exceptions, found in every part of the United States. It is one of the tallest of the genus, and under favourable circumstances becomes,

indeed, the giant of the forest. It often rises to the height of 80 or 90 feet, and has a diameter of four or five feet. To particularize localities would be unnecessary, but it may be stated that it does not require so fertile a soil as the White Oak.

The trunk of the Black Oak is clothed with a thick rough bark of a black, or dark brown colour, by which it can generally be distinguished from other species to which it is allied. The taste of this bark is, moreover, very bitter, and it communicates a yellowish tinge to the saliva. The leaves are large, divided into four or five lobes, deeply laciniated with large open sinuses.

This species is, on many accounts, the most important that we possess. The timber though coarse grained and much inferior to the White Oak, is much prized for its strength and durability, and it supplies a great portion of the staves used in and exported from this state. But this tree is probably most valued for its bark, which contains a very large quantity of tannin. The cellular part of this bark, moreover, furnishes the Quercitron so extensively employed as a yellow dye. This discovery was made by Dr. Bancroft, about the year 1796, who has described the processes for obtaining the dye and of communicating its color to various fabrics.

The valuable uses to which this tree is converted are conceived to be sufficient to enlist the attention of the agriculturist in its behalf. It grows with great luxuriance even in different soils and rapidly attains a great height.

12. Q. discolor. *Willdenow.*

This tree closely resembles the last ;—of which indeed Michaux considers it a mere variety.

13. Q. cocinea. *Michaux. Red, or Scarlet Oak.*

This species, sometimes also called Spanish Oak, is by no means so common as many of the preceding, though I have occasionally met with it in various parts of the State, particularly in the vicinity of Troy. Michaux describes it as a very tall tree, growing upwards of 80 feet in height ; but the individuals which have come under my observation have seldom exceeded 50 feet. The leaves are of a fine green color, smooth and shining on both sides, deeply laciniated with mostly four sinuses. The color of the leaves undergoes a change to a lively red, upon the occurrence of frost, giving the tree a singularly picturesque appearance.

The timber of this species is coarse and of a loose texture, and decays much faster than that of the White Oak. It is, also, but little esteemed for fuel. Its bark is, however, used by the tanner—upon the whole, the tree is not deserving of particular attention, except perhaps for ornamental purposes.

14. Q. polustris. *Willdenow. Pin Oak.—Swamp Oak.*

This tree is found every where, in our own state, and is generally found in all the northern and middle states; but is not so abundant at any given place as many other species. It is a tall tree mostly growing in swampy grounds. The secondary branches are slender and numerous, and in winter when deprived of its leaves it assumes from this circumstance a singular appearance to which it owes the name of Pin Oak.

The trunk of the Pin Oak, is clothed with a smoothish dark coloured bark. Its leaves are of a bright green, deeply lobed and resembling the Scarlet Oak. It can however be easily distinguished from this tree by the peculiar disposition and appearance of its branches, by smaller size of its acorns, and by the form of its cups.

The timber of this species is coarse grained and is not much esteemed, though it is occasionally used for staves.

15. Q. rubra. *Willdenow. Red Oak.*

This is a large and fine tree, known by the name of Red Oak, which, however, is also applied to some of the species heretofore noticed. It is one of our most common Oaks, extending Northward into Canada and Westward to the Alleghanies; but it becomes less abundant as we proceed South. The trunk has a thick bark ; the leaves are large and deeply cut, but the sinuses are more open than in the species just described. The acorn-cups are, moreover, remarkably shallow, and the scales so closely united as to give the appearance of an almost even surface.

The timber of the Red Oak is coarse, and the pores empty, on which account it is not converted to very important uses.

The Oaks thus noticed as belonging to this State may be ranked under the two divisions of Trees and Shrubs. To the former, belong the Mossy-Cup Oak, Post Oak, White Oak, Swamp White Oak, Swamp Chesnut Oak, Yellow Oak, Rock Oak, Willow Oak, Black Oak, Scarlet Oak, Pin Oak and Red Oak. To the latter, the Dwarf Chesnut Oak and Black Scrub Oak. The trees are chiefly valued for their timber and bark, and the shrubs for their fruit.

Of all the arborescent species found in our State, the White Oak is most deserving of notice, and its cultivation may be recommended as an object of primary importance. It is extensively employed in ship-building, and for strength and durability it holds the very first rank. It is also well fitted for staves, which constitute an important article of export. Time would fail me to enumerate the various other uses to which this timber is applied.

Considering the remarks made concerning the White Oak as applying also to the Swamp White Oak, the next in importance is the Rock Oak, which is not surpassed by any other for fuel, and which may also be converted to most of the uses of White Oak.

The Black Oak is highly valuable for its bark, which furnishes the Quercitron of commerce.

Should this country continue to be a commercial one, the cultivation of the more strong and durable species of this genus will eventually become a matter of necessity. In England, the price of ship-building advanced 100 per cent. in less than a 100 years, and until some provision was made, it was computed that there was not timber enough in the Island to keep the navy in repair. In the United States, too, according to Seybert, the price of timber for ship-building increased on an average 10 per cent. from 1800 to 1810.

The immense amount of timber consumed in ship-building may be judged of by the fact stated in Sinclair's Code of Agriculture, that a 74 gun ship requires 3000 loads of wood, the produce of 50 acres, each tree standing a rod, or 33 feet apart.

Sufficient has now been said to show the importance of an attention to the cultivation of our useful species of Oak. I have neither the time nor the ability to point out the details of the manner in which this object should be pursued, but I trust it will ere long receive the notice of patriotic individuals and of our National and State Legislatures.

LEWIS C. BECK.

Albany, Jan. 1830.

[For the New-York Farmer.]

ART. II.—*Vegetable Physiology. Circulation of sap, as instanced in the branches of trees injured by fire.*—By E. H. DIXON.

MR. EDITOR,—In a recent number of your paper, you had the goodness to publish some of my experiments, illustrating the circulation of the sap; as I have since had an opportunity of making some observations in confirmation of the theory then advanced, I herewith transmit the result of them.

Some sycamore trees were growing in the immediate vicinity of a barn, which was consumed by fire. The heat being very intense, the trees were very much injured. This was in the fall of the year 1828. It occurred to me, to make an examination of them on the ensuing spring, but I had no opportunity of seeing them again till last August.

Two of them were quite small, and as they were much exposed to the heat, some of the smallest branches were nearly burnt through: in several of these, with the exception of about half of the bark, the wood was so scorched (all that was not actually burnt to charcoal,) as to retain no vestige of life, which I ascertained upon cutting some of them in two. Others received very little injury, a small space only being burnt: and in some of these, from peculiarity of situation, the bark only was destroyed; thus affording every opportunity for observation.

Now the results were very curious and satisfactory. Those limbs in which the wood was completely destroyed (although part of the bark remained entire) did not show the least sign of vegetation beyond the burnt part. Had the sap ascended by the bark, as was formerly supposed, some traces of vegetation would undoubtedly have appeared beyond the injury. But it was not so. On the contrary, the upper parts of the trees injured in this manner, were completely destitute of foliage, while the young shoots appeared in great profusion from below the injury.

A very different appearance was presented by those whose bark only was destroyed.—It is proper to mention that some small portion of the wood in these also was injured; enough, however, was left for the continuance of the circulation, which was evinced by a growth nearly as luxuriant above, as below the burnt part: this certainly was sufficient evidence that the top of the tree received its due portion of sap, which would have reached it by no other agency than that of the wood.

These last were attended by the following curious circumstance. The leaves fell about a fortnight before the others. I can not account for this but by supposing an analogy between the vegetable and animal tribe, which your readers will probably think admissible.

We know that every part of our system requires a certain quantum of blood for the continuance of life and a proper performance of its functions. But if this limited quantity be exceeded, prejudicial effects are produced, the vital functions are oppressed, and (as in apoplexy) we die from the excess of that very fluid which was intended for the continuance of our existence. Or as a celebrated authoress has beautifully expressed it, when applied to the human mind: "We may extinguish the flame of a lamp by too lavish a supply of that oil from which its existence was derived."

The idea that the early falling of the leaves was caused by a surcharge of sap, would be still more satisfactory, if observation and analogy would allow the admission of the descent of the whole of the sap during the winter months. We should then have a mechanical cause for it. But it would be as reasonable to suppose that the blood makes its exit from the human body by the feet, when the vital principle is suspended.

There can be no doubt that heat, as a chemical agent, produces the same effect upon the sap of vegetables, as upon most other liquids, viz. causing it to expand and assisting its circulation; while cold produces results directly contrary, condensing the fluids and stopping their progress through the vessels of the tree: not causing its descent into the root of the tree, because we know that the trunk and roots of a tree become dry as soon as the upper branches, which last would be the soonest dry if the sap first deserted them. The fact, so well known to horticulturists, that the extremities of vegetables first unfold themselves under the genial influence of spring, will furnish another objection to this commonly received opinion.

That the leaves perform the office of lungs, all modern horticulturists admit. Now it is as reasonable to suppose, that an increased quantity of sap would obstruct their movements, as that the same effects would be produced by a similar cause in the human species; and this is all the explanation I am capable of giving relative to this curious phenomenon.

Some of your numerous and ingenious writers will perhaps favour us with their opinion.

EDWARD H. DIXON.

Long Island, Jan, 1830.

ART. III.—*Horticultural Improvements. The climate of New-York favorable for the Cultivation of many useful Foreign Plants.* By ALEXANDER WALSH. [To the Editor of the New-York Farmer.]

SIR,—I notice in a late Number of your work, an article on Filberts, stating, that large quantities of them are vended in the United States, the growth of other countries, and correctly urging the culture of them at home. The climate of this state is very suitable for them; I have many bushes in my garden, in a fine thriving state, which promise soon to be very productive. I have also the Almond Tree, which has stood the two last years, and is now in a flourishing healthy state, not one has been lost out of several planted, although last winter was unusually severe. But the fact of this tree growing well in this state is not new; a large Almond Tree is to be seen on a farm of Mr. A. Sherwood's, a short distance from Fishkill, which has yielded for many years, a bushel, and a bushel and a half of Almonds annually.

I am trying many other new trees, among which are the valuable Spanish Chesnut and English Walnut, and have little doubt of success. I am induced to notice these little attempts at introducing something new, (that may be useful) in the hope of influencing others to make similar trials and state the result.

We have been so used in the Northern part of this state, to cut and clean away every thing in the form of a tree, that it may take some time to get a different and more pleasing mode introduced. It has been remarked by foreigners traveling through our country, "that very little attention is paid to tasteful planting around dwellings, and from formerly being too woody, we now have the opposite extreme of nakedness."

Our Village is not behind many others in useful ex-

periments. The following is from the Troy Sentinel for October:

"*Lansingburgh Raisins.*—A friend has sent us a specimen of Raisins prepared by Mr. Learned of that place, from grapes raised this year in his own garden. They were made from the White Madeira Grape, or Sweet-Water, as it is commonly called, and cost no other trouble than cutting of the clusters and putting them twice into an oven after baking bread.

"Horatio Gates Spafford, of Lansingburgh, also, has made excellent raisins from his own grapes this year, with very little trouble: one species of his grape is the same as that from which the bloom raisin is made."

Mr. Learned, has just exhibited a canister of Tea, his own raising and curing; it tastes very similar, but does not look as the imported Tea. Will you be good enough to point out the best mode of drying or curing the tea leaf, and a second attempt may be more successful.

My father introduced Celery in this section of the country, and the Egg Plant. Green Globe Artichoke and a great variety of the Brocolis, &c. &c., I claim the merit of introducing to our Village market, and am using my best endeavours to make them known around us.

A little more than common attention is just at this time beginning to be paid to Horticulture; but it is still deserving of a much greater excitement. Dr. Spafford, is pleasingly conversant with this subject, and is well qualified to render you assistance. The subjoined article on the Vine, signed S., is from his pen, and if I have any influence with him, shall use it to procure one hereafter, more valuable, for your useful publication. Very respectfully,

ALEXANDER WALSH.

Lansingburgh, Jan. 16, 1830.

P. S. The weather is so mild and pleasant, that I notice in my garden, several fine clusters of Honeysuckles, in full bloom, and many of the small shrubbery nearly new leafed: and among the young trees, the English Lime, Sycamore, Weeping Ash, and Striped Maple, as far advanced in vegetation as is probable they will be the 1st April next. A. W.

ART. IV.—*The Vine.* By S.

The very decided expression of public opinion in favor of the culture of the Grape Vine, which we see in almost every garden, and on many farms, calls for new sources of instruction, as to the culture. Several works have issued from the American press, all useful, and giving practical instructions, from more or less experiments, so that every person, disposed to cultivate the Vine, may learn something from the past experience of others. Major Adlum, of Georgetown; Dufour, of the Vevay Swiss Vineyard, Ohio; and Loubat, of New-York, are all before me, and they are all good instructors. Adlum, the father of this culture in the United States, is entitled to great consideration, for his directions all founded on his own experiments. To them has lately been added, by the enterprise of our publishers, an English copy of the very superior work of Bernaud,* Superintendent of the National Vineyard of France. 'The Vine Dresser's Theoretical and Pratical Manuel, or the Art of Cultivating the Vine, and making Wine, Brandy and Vinegar; with descriptions of the species and varieties of the Vine; the climates, soils and sites, in which each may be successfully cultivated, with their time of blossoming and bearing: the diseases of the Vine, and means of prevention. With instructions for the preservation of Wine, Brandy, Vinegar, Confections, &c., of the Grape, the Wine Cellar, and the Economy of the Vineyard. By J. de Berneaud.' Published by P. Canfield, New-York, 1829, octavo, 163 pages, with two plates. This work, to say the least of it, should be in the hands of every scientific cultivator of the Grape, in America. Its instructions are plain, and all it wants, is, a few cuts, such as are given in the 'American Vine Dresser's Guide,' by my late worthy friend, Dufour, to show how to train and prune the Vine. S.

* The Book of Bernaud, noticed above, was translated by the daughter of the zealous Dr. Pascalis, from whom the copy I have, is a present. Dr. P. is doing much towards diffusing a taste for the Grape Culture, and also, the Mulberry, and Silk Worm, as well as in giving the necessary practical instructions to our countrymen, and the ladies. S.

ART. V.—NATURAL HISTORY.—*Class IV.—Fishes.* By the EDITOR. [Continued from page 282, Vol 2.]

In consequence of living in an element, in which man cannot exert his respirable organs, that large portion of animated nature inhabiting the sea, is less known than those that breathe the air. Unlike other animals, the finny race neither encroach on the dominions of man, nor are they in the least dependant on his provident care. But the carnivorous appetite and the multiplied wants of man, have led him to overcome the obstacles which difference of element presents, and thus to subjugate the inhabitants of the deep, as far as his convenience and wants require.

The organs and structure of fishes, like those of other living creatures, are adapted to the element in which they live, and to the purposes designed for them by Providence. Unable to breathe air unmixed with water, the organs of respiration, of most fishes, are so constructed, that the air existing in water, is amply sufficient for the functions of life, with occasional access to the surface. The air in the water is absolutely necessary, from the fact, that they can not live in water that has had the air expelled by boiling. They have but one auricle and one ventricle. The gills serve the offices of lungs. The blood coming from the heart is transmitted to the gills, where it is distributed into the fibrils or fringes, and where it is affected by the air existing in the water constantly coming in contact with them. From the gills the blood, by a large artery, passes down along the spine, whence it is distributed over the body to be again collected and transmitted to the heart by the auricle.

Their food is of shell-fish and worms, but principally of other fishes, and hence, to perpetuate the species, they are very prolific in progeneration, and long-lived. For instinctive powers, they are less distinguished than the greater part of brute being. In size, shape, and habits, there is an almost endless variety, and hence they are divided into orders and genera. Their means of defence, are either strong sharp spines, a sword, or the power of inflicting electrical shocks. Their brain

is small.—They have the senses of seeing, hearing, smelling, and tasting—also of touch more imperfectly.

(To be Continued.)

[From the N. E. Farmer.]

ART. VI.—*Milk of the Cow Tree.*

MR. FESSENDEN,—In your paper of December 25th, is a short notice of the Cow Tree of Colombia. Having, through the politeness of FRANKLIN LITCHFIELD, Esq. American Consul at Puerto Cabello, received a quantity of the juice of this tree, together with a piece of the bark, to be deposited in the cabinet of the University, I have submitted it to a chemical examination. From the situation where the specimen I received was taken, and other circumstances, it is probable that the tree might be readily cultivated in some parts of the United States, and Mr. LITCHFIELD has been requested to procure small plants or seeds for cultivation in the Botanic Garden in Cambridge.

The following is an extract from Mr. LITCHFIELD's letter:—"I have the pleasure to send you a bottle of the milk of the *Arbol de la Vaca*, or Cow Tree, which belongs to the family of the *Galactodendrons*, as well as a piece of the bark which I cut from the tree, out of which I assisted to collect the milk contained in said bottle. The tree from which I took the milk, grew upon a mountain in Patanemo, about 5 leagues from this port, and at a height of from 3 to 4000 feet above the level of the sea. Its circumference was about 2½ yards, and its elevation, I should judge, nearly 140 feet. At this altitude the temperature is quite cool, and for five or six months of the year, the atmosphere is quite damp, and frequent rains fall on the mountains. I also send a small piece of the wax which has been formed by merely exposing the milk to the air."

The specimen of the juice received, is white, and in general bears a very close resemblance to cows' milk, or rather cream; it is, however, somewhat thicker and has a viscid feel. By exposure to the air, its color is changed to a light brown, and the viscidity is increased by drying till it becomes of the consistency of wax; in this state it has the color of Rosin.

The odour of this specimen is nearly the same as that of sour cream, and its taste is similar.

When heated, it presents the same appearance as cows' milk. By continuing the application of heat, a substance resembling wax is obtained, which is soluble in alcohol, and may perhaps become of use in some of the arts. This substance has some resemblance to Caouthouc. It can be made to answer the purposes of wax in forming candles, as it burns with the emission of a pure and strong light.

A fibrous matter is separable from the milk, very analogous to the fibrin of animals.

There are some circumstances in which this highly curious and interesting liquid differs from cows' milk, viz. the absence of what is commonly called curd, and albumen. Wax, Fibrin, Sugar, and coloring matter, are the principal substances obtained from the juice by analysis.

The tree which affords this milk, has been described by HUMBOLDT, and the Spanish naturalists RIVERO and BOUSSINGOULT. "I confess," says HUMBOLDT, "that, among the great number of curious phenomena I have observed in the course of my travels, there are few which have made a stronger impression on my mind than the Cow Tree. All that has any connexion with milk, all that relates to cereals, inspires us with an interest which is not simply that of the knowledge of causes, but which is connected with another series of ideas and feelings. We cannot, without difficulty, believe that the human species can exist without farinaceous substances, nor without the nutritious milk contained in the bosom of a mother, which is intended for the long weakness of infancy. The starchy nature of grains,—an object of religious veneration among so many ancient and modern nations, is disseminated in the seeds, and deposited in the roots of vegetables; milk appears exclusively to be the production of animal organization. Such are the impressions received in childhood, and such is the cause of the astonishment we feel at the sight of the tree we are going to describe. Here our emotion is not caused by the dark, thick solitude of woods, nor by the majestic courses of rivers, nor by those mountains covered with eternal snow, but a few drops of a vegetable juice, make us sensible of the power and fecundity of nature. On the barren declivities of a rock grows a tree, whose leaves are dry and coriaceous. Its thick, ligneous roots scarcely enter the rock; for several months in the year, rain scarcely waters its fan shaped leaves. The branches appear dry and dead. But when an incision is made in the trunk, a sweet and nutritious milk flows from it. It is at the rising of the sun that the vegetable liquid runs most abundantly. Then the natives and negroes are seen to come from all parts, provided with vessels, to receive the milk, which becomes yellow, and thickens at the surface. Some empty their vessels under the same tree; others carry them to their children. It is like a shepherd distributing to his family the milk of his flock."—*Humboldt, Voyage aux Regions Equinoxiales du Nouveau continent*, lib. v. chap. xvi.

The following is from the account of Messrs. RIVERO and BOUSSINGOULT:—"If those who possess these precious trees near their habitations, drink with so much pleasure their beneficent juice, with what delight will the traveller, who penetrates into these high mountains, appease with it his hunger and thirst? Thus we have seen, on the road from Patito to Puerto Cabello, all these trees full of incisions, made by the travellers, who suck them with anxiety. It would be sufficient, it appears to us, that this milk could be used as an aliment, to value it, and invite to the cultivation of the trees which furnish it, but nature has been pleased to make it still more precious and useful; for besides containing so nutritious a substance as fibrin, it also contains, in abundance, an exquisite kind of wax, which may be extracted with great facility."

Yours, &c.

J. W. W.

Harvard University, Jan. 2, 1830.

[From the Albany Argus.]

ART. VII.—*Albany Horticultural Society. Proceedings and Report of the Inspecting Committee.*

This society was organized during the autumn of 1828, since which time it has been in successful operation. Though it had to contend with many untoward circumstances, incident to the infancy of an institution of this kind, its influence upon the state of horticulture in this city, and its vicinity, is already ap-

parent.—It is confidently believed that an increase of effort on the part of the members, will lead to still further improvement in this interesting branch of industry. The following abstract of the proceedings of the inspecting committee of the last year, is offered with a view of directing the attention of the public to the objects for which this society was formed.

The inspecting committee were charged with the examination of the various articles presented for premiums, for which purpose they held meetings on the 2d and 4th Tuesdays of each month, from April to October inclusive. The following articles were exhibited at these meetings as designated:

April 14*th*, 1829. A new Russian stock and seedling polyanthus—by Mr. Wilcox.

Variegated stocks, double ragged-robbins, (a hardy fine flowering perennial) and tea roses—Mr. Wilson.

Sea kale and asparagus—Mr. Buel.

Several beautiful varieties of auriculas, geraniums, &c.—Mr. Quackenbush.

Bunches of asparagus—Mr. Slingerland and Mr. Churnside.

April 25*th*.—An exhibition of greenhouse plants and flowers was made in the hall of the academy by Mr. Wilson, Mr. Wilcox, and several ladies of the city.—Fine blanched rhubarb, three feet in length, was also presented by Mr. Buel.

May 26*th*.—Six fine heads of lettuce—by Mr. Dowling.

Remarkably fine tulips—Mr. Quackenbush.

Polyanthus and wall flowers—Mr. Wilcox.

Chinese peonies, seedling China roses, and other flowers from the Albany nursery—Messrs. Buel and Wilson.

June 9*th*.—Green peas—by Messrs. Churnside, Wilcox and Wilson.

Seedling roses—Messrs. Slingerland and Wilson.

Scarlet Strawberries—Mr. Buel.

Flowers of various kinds—Messrs. Wilson, Quackenbush, Wilcox and Slingerland.

June 20*th*.—Exhibition in the hall of the academy.

Seventy varieties of hardy roses, embracing the white and red moss, and almost every shade of color, from what are termed the black, to the chaste *unique*, or white provence; and three splendid boquets of flowers from the Albany nursery—Messrs. Buel and Wilson.

Several varieties of roses, and a dish of Hudson's Bay strawberries—by Mr. Wilcox.

Roses, May duke cherries and white strawberries—Mr. Slingerland.

Roses, and a variety of other flowers—Mr. Dowling.

Fine plants and flowers were also exhibited by several ladies of the city.

June 23*d*.—Methven, Downton, and Chili strawberries—by Judge Spencer, Messrs. Buel, and B. Bleecker.

Green beans—Messrs. Dowling and P. Clark.

Early cabbages—Mr. Churnside.

Cherries of various kinds—Messrs. Slingerland and B. Bleecker.

A fine collection of flowers, consisting of pinks, roses, lilies, carnations, &c. &c.—Messrs. Wilcox and Slingerland.

July 3*d*.—New potatoes—Mr. Dowling.

White and red currants, potatoes, and a variety of flowers—Mr. Churnside.

A collection of pinks, carnations, salvias, lilies, roses (one of which was 11 inches in circumference)—Mr. Slingerland.

Eight sorts of carnations, Rosa rubifolia, Rhododendron maximum, Spigelia marilandica, and a variety of other flowers—Mr. Wilson.

July 13*th*.—Gooseberries, (12 of which weighed 5 ounces;) red currants, (11 bunches weighing 4 ounces;) red Antwerp strawberries, and a large and splendid boquet consisting of double hollyhocks of various colors, double flowered pomgranates, &c. &c. from the garden of Gen. Van Rensselaer, Sen.—by Mr. Churnside.

White currants and carrots—Mr. D. Robinson.

Early harvest apples—Mr. Dowling.

Raspberries, beets and parsnips—Mr. Slingerland.

Do.—Mr. Wilcox.

A variety of flowers of different kinds—by Messrs. Buel, Wilson, Robinson, Wilcox and Slingerland.

July 28*th*.—Cabbage, weighing 2½ pounds; 6 beets weighing 9 pounds; 8 onions 2¾ pounds; full grown peppers and several other culinary vegetables, in fine perfection, raised without artificial heat—by Mr. S. Stafford.

Early July pears, apples, ripe tomatoes and several flowers—Mr. Slingerland.

Red Antwerp raspberries and a boquet of flowers, from the garden of Gen. Van Rensselaer—Mr. Churnside.

Fine Antwerp raspberries—Mr. Denniston.

From the garden of Gen. Van Rensselaer, an early Manchester cabbage, weighing 5¾ pounds, a summer squash 4 pounds, and a new species of Rudbeckia.

A full grown squash and pepper—also a number of marigolds, poppies, balsams, &c.—Mr. Bement.

August 11*th*.—Fine Lima beans—Mr. E. C. Delavan.

A variety of annual and perennial flowers, fine tomatoes, and a drumhead cabbage, weighing 14½ lbs.—Mr. Slingerland.

Double and perennial sun-flowers, Datura arborea, and a variety of China and hardy monthly roses, from the Albany Nursery—Messrs. Buel and Wilson.

A splendid boquet of flowers, India and Lima beans, from the garden of Gen. Van Rensselaer.

Two cauliflowers, weighing 1 lb. 15 oz. and 1 lb. 4 oz. from the garden of Gen. Van Rensselaer, Jun.

August 25*th*.—Dutchess of Oldenburgh apples, a fine English variety, and the first known to have been raised in this country, and sundry fine vegetables and flowers—Mr. Slingerland.

Eight kinds of superior plums, and sweet water grapes—Mr. Denniston.

Flowers of several kinds, as double white cape jasmine, white and purple stocks, &c. &c.—Mr. Wilcox.

A variety of flowers, including bignonia, grandiflora, roses, honey suckles, asters, marigold, &c.—Messrs. Buel and Wilson.

Savoy cabbages and a water melon weighing 24 lbs. Mr. P. Clark.

Balmar plums (superior)—Mr. T. W. Olcott.

Queen Claude plums and melons—Mr. Delavan.

Two bunches Chasselas grapes, weighing 1 lb.—Mr. J. Hancock.

Chinese white day lily and other flowers, from the garden of Gen. Van Rensselaer—Mr. Churnside.

Six heads of celery and Olera, from the garden of Gen. Van Rensselaer—Mr. D. Robinson.

September 8th.—Grapes of a superior quality, as follows, viz. one bunch white Tokay, 18 ounces; one bunch sweet water, 15½ ounces, and a few bunches of the black close clustered Burgundy, very fine—by Mr. Churnside,.

Two clusters of the native Isabella grapes, weighing 9 and 7 ounces—Mr. R. M. Meigs.

Two fine musk-mellons—Mr. Robinson.

A fine water-mellon; four red onions weighing 2 lbs. 2oz. 4 white onions weighing 2 lbs. and a bunch of ten roots of salsify or vegetable oyster, of remarkable size—Mr. J. Godfrey.

A dozen cling stone peaches, of a superior quality—Mr. Delavan.

A fine collection of flowers, indigenous exotic—Mr. C. N. Bement.

September 22d.—A splendid collection of peaches of the finest kinds, from the garden of Mr. J. Thompson, of Catskill; the Wellington and Dornton pippin, from the garden of the Rev. J. Prentice, of Athens, Mr. Buel.

Several varieties of grapes, apples and pears, from the Albany nursery—Messrs. Buel & Wilson.

Pumpkins, sweeting apples, very large, and fine Bergamot pears.—Mr. Dowling.

Very fine specimens of more than a dozen varieties of apples—Mr. P. Clark.

A boquet of various flowers; several varieties of apples; a Minorca Melon, &c. Mr. Slingerland.

Four heads of brocoli, weighing from 2¾ to 4¼ lbs. Mr. Wilson.

A beet, weighing 11½ lbs.—Mr. Hancock.

October 20th.—Double purple Jacobea; pyrus; japonica, in full flower, from open ground; monthly and trumpet honey suckles, roses &c., and sundry vegetables from the Albany Nursery.

Agreeably to the recommendations of the inspecting committee, premiums were awarded by the society to the following gentlemen:

Judge Buel, Barent Bleecker, Isaac Denniston, D. B. Slingerland, E. C. Delavan, C. N. Bement, P. Clark, John N. Quackenbush, R. M. Meigs, J. Wilson, G. Wilcox, Thos. Dowling, G. Churnside and D. Robinson.

A number of the above gentlemen remitted their premiums for the benefit of the society's fund, and for the purpose of procuring drawings and paintings of the more superior fruit that shall be exhibited at the stated meetings for the next season.

[The remitting of premiums for such an object is worthy of imitation by the members of the New-York Horticultural Society, particularly by those who are affluent, and who have frequently obtained them. *Ed. N. Y. Farmer.*]

[For the NewYork-Farmer.]

ART. VIII.—*Gypsum as a manure.—Plants Feed on Air.* By PRO. A. EATON, of Troy, New-York.

The gypsum, or plaster of Paris, when in chrystals, is composed of 35½ per cent. of lime, 50 per cent of sulphuric acid (oil of vitriol,) and 22½ of solid water. It may be made artificially with this mixture. It contains when taken from the earth, in the amorphous state, a large proportion of water in the state of a solid chemically combined with it in equal proportion throughout its whole mass. It is found in small quantities in some places, as at Lockport, &c. with little or no water in combination—it is then called *anhydrous gypsum.**

The great value of gypsum, as a cement, in the manufacture of millstones &c. depends on its strong attraction for water. After being pulverised and sufficiently heated to render it an artificial anhydrate its attraction for water is so great, that it will become solid from a dilute paste, in about five minutes. This rapid hardening requires to be checked by dissolved glue, or other animal matter to give the artist time to apply it. Its powerful attraction for water, has induced some agriculturists to ascribe its powers as a manure to this quality. But it is always completely saturated with water in its ordinary state therefore we must search for other qualities to account for its effect upon vegetables. And here the *living principle* comes in to embarrass the enquiry; as in all other cases where inorganic matter, and the living principle are to be considered collectively.

In the present state of science, we are induced to resort to facts, and to be contented with results, rather than search in vain for these secret operations of nature. We may go so far as to assert, that it acts as a stimulus upon the living principle of vegetables. For half an ounce of gypsum applied to one plant of Indian corn will cause an addition to its weight of several pounds; and even then the gypsum applied may still be found, or most of it at the base of the plant. Therefore its effects cannot depend on the addition of its substance to the plant. It acts in a manner analagous to a glass of brandy, taken by a healthy laboring man, producing a voraceous appetite for food. This analogy may be carried farther. The plant not only takes more nutricious matter from the atmosphere, while under the operation of this stimulus; but it devours the nutricious substances contained in the soil. It is now established beyond a doubt, that *the simple application of gypsum to the Indian corn plant, im-*

---

* I am thus particular to introduce this subject, with well known facts, as I have been criticised for omitting to state what was well known, by a writer under Freshman, in Article 179 of the last volume. I acknowledge my obligation to that writer however (whom I suspect to be a full grown graduate) for filling up the chasm with well digested materials. I believe the elements of all I had omitted, will be found in article 196 of that volume.

While I am writing a note of apology, I wish to say to the readers of the New-York Farmer, that I regret the publication of my remarks on *Gymnasium* in the Article 178. I wrote in haste, and sent the article without reviewing, but followed it with a note requesting a change in the phraseology. But it was printed before my note was received. I now declare explicitly, that I had no reference to any institution, nor to any branch of an institution, on account of assuming this name. I consider it analagous to the name Lyceum, which is now applied to institutions of a very different character from that which gave the name. And I regret that I expressed my disapprobation of this mode of wasting time (which ought to be devoted to land surveying, engineering, botanising, &c.) in language, which may be offensive to those who differ in opinion. I offer as an apology, that it did not occur to me at the moment, that the guardians of any school in America, continued to advocate that practice. A little indulgence may be asked for irresistible irritation, excited by the crippling of my nephew at a Gymnasium School.

poverishes soil. It may be added that its application to numerous other plants produces the same effect.

The question then occurs—is gypsum a profitable manure? To this I answer, it is the most profitable of all manures, if rightly applied, taking into view its cheapness and convenient application. *Land can be enriched by the application of gypsum to plants growing on it of those kinds only, which have large fleshy roots, intermediate in texture between the succulent and the woody.* If very succulent they soon decay, become watery and transitory. If woody, they endure too long. The roots of the *Tripolium pratense* (red clover) are of that medium texture, which is best adapted to the purpose. The experience of forty years in the counties of Columbia and Dutchess in this state, has demonstrated that this plant is well adapted to that purpose.

My object in presenting these facts to the readers of the Farmer, which are known to all agriculturists, is to point the attention to a proposition, which I advanced in a former number—that "Plants feed on Air." In that article it was expressly stated, that the atmosphere, with all that floated in it, were intended, as carbonic acid, ammonia, aqueous vapor, &c. In the case before us, I believe it would try the ingenuity of the most ingenious, to find any source of vegetable nutriment but the atmosphere. A field of barren sand is sown to clover seed and gypsum. The gypsum stimulates the plant and causes it to seize upon its aeriform and vaporous diet; whether received directly through the pores of its herbage, or through the medium of the sandy soil. The same stimulus excites the rootlets, porous coverings, &c. to the performance of the compositions, decompositions, absorptions, &c. necessary to the growth of the plant. These nutritious materials are carried into the earth in the form of fleshy roots; and there left to decay and enrich the soil.

Rensselaer School, AMOS EATON.
Troy, Jan. 23, 1830.

ART. IX.—*Railways—Proposed route to connect the Hudson and Mississippi.—Description of the great valley of the Mississippi.—Effects on the Agricultural Interests.* By the EDITOR.

The application of steam to locomotive engines on railways, is justly considered one of man's prondest triumphs in rendering physical laws subservient to his purposes. The Art of printing enabled mankind to become acquainted with the knowledge and opinions of each other; railways will introduce them in person. The former was favorable to investigatoin and research, and had an effect on nations, similar to that of close reading and study on an individual; the latter, for enterprise and enlarged views, having an effect not unlike that on an individual, who visits other countries mingling with the most intelligent, and inspecting every object worthy of notice. Through the instrumentality of printing we can obtain more information in a few hours reading, than by travelling for years. With the assistance of rail roads and steam, we can traverse, in a few weeks, an extent of country, which, in the old modes of journeying, would have consumed no inconsiderable portion of the medium length of human life. Printing is something of a substitute for an universal language. The facilities of locomotion will tend to assimilate the manners and customs of mankind, and strengthen those ties of union, that will remove the causes of war.

Over every other method of transportation, they have decided advantages. They are more durable, and less expensive in their original cost, and in repairs, than canals. The velocity is also much greater.—By recent experiments, in England, single cars have gone at the surprising rate of thirty miles per hour. On canals the speed cannot, without a quadruple increase of power, and without endangering the banks, exceed five or six miles. They are applicable to all latitudes, and interrupted by no change of seasons; canals on the contrary, in high latitudes, are frozen over in winter, and in warm climates, are unhealthy, from the stagnancy of their waters.

The proposed route of a railway, to unite the Hudson to the Mississippi, is a grand and stupendous project. When compleated, it will afford a proud monument of man's progress in the arts of civilization. It is to commence on the banks of the Hudson, at Tappan Creek, about twenty miles above New-York. It will take a circular direction, crossing the Delaware, and head waters of the Susquehannah and Ohio, until it reaches the Ohio canal, about forty miles south of Lake Erie; from thence proceeding, in a more straight course, through the states of Ohio and Indiana, it takes a curve and unites with the Mississippi at its junction with Rock river. The distance is computed to be 970 miles. The greatest elevation, above the surface of Lake Erie, is 847 feet at Olean on the Alleghany river. The route is said to present no serious obstacles, and generally to be highly favorable.

The cost of a canal averages about $17,000 per mile. A double railway, with two complete sets of tracks, will cost about $14,000 per mile—with one set of tracks, and suitable turn-outs, not much more than half this sum. One of the former description, between the two rivers, could be made for $14,000,000. This amount, although large, will not appear to exceed the means of our country, when we recollect that it is not half of what is raised in a single year by consumers of ardent spirits.

From an inspection of the map, it will be seen that this contemplated railway will pass through some of the most fertile and important portions of our interior states, and intersect the natural and artificial channels of navigation that connect almost every section of our extended country. The river navigation in the great valley of the Mississippi, is computed to be *fifty thousand miles.* A considerable part of this extent, however, is either occasionally interrupted by variations in the depth of water, or for a few months rendered unnavigable by ice. The railroad, on the contrary, will be liable to no interruptions. Throughout the whole year, it will be a thoroughfare for the enterchange of the merchandise and produce of the Eastern, Middle, and Western states. Some idea may be formed of its great importance from the following description of the great valley of the Mississippi. It is taken from the American Quarterly Review, for March, 1829.

"The great central valley of the United States may be naturally divided into the following very distinctly marked sections, viz.:—1st The western slope of the Alleghany mountains; 2dly, The eastern slope of the Rocky mountains—these have but little width; 3dly The sand plains that commence at the foot of the Rocky mountains, are about five hundred miles in width, producing stinted shrubs and prickles; and

with but little elevation above the great Mississippi plain, rest upon, and form the line of its western termination. 4thly, The great plain of the Mississippi valley, commencing at the foot of the Alleghany mountains; it extends fifteen hundred miles west, to the sand plain, and is limited north by the valley of the northern lakes, and south by the Missouri hills, and a line crossing from them to the Cumberland mountain, and passing by an inflection, nor far from the mouth of the Ohio. This is much the most important division; contains the nucleus of the growing population of the west, and combines most of its fertility.

"The great plain of the central, or Mississippi valley, claims our attention. It extends from the western slope of the Alleghany, to the sand plain region that we have just described—a distance of about fifteen hundred miles; and from the valley of the northern lakes to the mouth of the Ohio, a distance of six hundred miles in width. This is the most valuable region of the United States; uniformly fertile, and the seat of our western population. It embraces the states of Ohio, Indiana, Illinois, Missouri, Kentucky, parts of Pennsylvania, Virginia, Tennessee, Arkansas and Michigan; and a region about five hundred miles in width, lying west of these states and organized territories. No part of the globe presents such an extent of uniform fertility. It is literally all arable; there are no sterile plains, no rocky or precipitous ridges, and scarcely any swamps to deform its fair surface. This uninterrupted fertility arises from the decomposition of the great limestone pan upon which it rests.

"This region, although crossed by the great rivers Mississippi, Missouri, Ohio, and their branches, is really not a valley, but a plain. The difference in elevation over its whole surface, is only a few feet. Actual surveys tell us that such is the fact. The northeast corner of this plain, near Pittsburgh, Pennsylvania, lies about eight hundred feet above the tides; the plains of Kentucky and West Tennessee are about the same height; at the mouth of the Ohio, but little different; and as we go westwardly, up the Missouri, or Arkansas, to the sand plains, the same conclusions force themselves upon us. The great and numerous rivers that cross this plain, instead of forming distinct valleys, do but indent narrow lines, or grooves into its surface, barely sufficient to contain their floods. These river channels, as the currents roll on, must form a declivity; and towards the lower parts of their courses, sink deeper into the plain: hence the large rivers of Ohio, Missouri, and others, seem bordered with abrupt hills of several hundred feet elevation towards their mouths; but the tops of these hills are the level of the great plain, and are formed by the smaller streams which fall into these large rivers, when their channels are thus worn down; and, to give themselves an easy slope, these small streams must wear down in a corresponding manner, the neighbouring part of the plain: and leaving the abrupt points between them, present the appearance of river hills.

"The formation of this plain is entirely secondary, resting upon a horizontal limestone rock, whose thick strata have never been penetrated through, although the augur has pierced it in many places, in search of salt water, to the depth of four, and frequently six hundred feet. This limestone pan is generally but a few feet below the surface, and supports strata of the bituminous coal and saline impregnations, throughout most of its whole extent. It runs under the Alleghany mountains on the east; the sand plains on the west; rests on the granite ridges of Canada on the north; and is limited by the Cumberland and Ozark mountains on the south. The decomposition of this rock has fertilized this wide region, and its absorbent and cavernous nature, prevents swamps and moisture accumulating on its surface. Without mountains to relieve, or deep valleys to draw off the water, this widely extended region appears dry, clean, and healthful.

"In addition to its unlimited agricultural capacity, this great plain abounds in mineral resources; its coal field would cover half of Europe, and is 1500 by 600 miles in extent. We enter upon the bituminous coal in Pennsylvania, on the western waters of Susquehannah, and travel upon it through Ohio, Indiana, Illinois, Missouri, and to the very sand plains of the west—a distance of more than 1500 miles; and from the Cumberland mountains in Kentucky and Tennessee, to the lakes, a distance of 600 miles. This coal is pure, lies above the river channels, and to quarry it, costs about twenty cents a ton. Iron ore abounds generally, but in Missouri there is a mass of this ore, forming a hill of 500 feet in height, and five miles in extent, which yields seventy-five per cent. of fine malleable iron. The lead districts of Missouri and Illinois, would cover 200 miles square, and seem to be the richest region of that metal on earth.—Near 13,000,000 pounds were smelted in the year 1828, and it is confidently expected to furnish 20,000,000 for the market in 1829.

"Salt water is found over the whole extent of this region; yielding from one-eighth to one-twelfth of its weight in pure muriate of soda. This salt water, in many places, breaks out in the shape of springs and fountains: but more frequently, the inhabitants bore to the depth of from 300 to 600 feet into solid rock; and when they strike the veins, it generally rises to the surface; and so general is the distribution of this indispensable article, that no doubt exists of its meeting the wants of the population in all stages. Gypsum and saltpetre are found in abundance, and most of the clays and earths useful in the arts. Here, indeed, will "every rood support its man;" for such a region, without barren, heath, mountain, waste, or slope, and where all is fertile and healthful; where no timber lands need be left for fuel; with mineral resources enough to stimulate all the arts, and contribute to all wants:—who can say what is the limits of its future population? Europe could seat all her nations comfortably upon this plain."

The introduction of railroads will tend to enhance the relative value of cultivated lands in their vicinity. Produce can be conveyed to market with much less expense, and with far greater expedition. The returns, too, for this produce, will be obtained for less expense in the charge of transportation. If the market price of agricultural products is reduced by the increased quantity of land brought within marketing distance, the greater variety of articles that can be raised for market will compensate for this reduction. A farm in the vicinity of a railroad, and two hundred miles from market, is in value fully equal to one at forty miles distant, having only ordinary, or turnpike roads for transportation.

One great item of expense in the management of a farm, is the amount of grain and grass consumed by horses.

In proportion as the produce is transported by railroads, a less number of horses is necessary. If a farmer can dispose of one horse for two cows, he changes an out-go for an income. Let steam be successfully applied to the plough, and the horse, from being the most valuable of domestic animals, will become the least useful and profitable. A change would take place in ameliorating the condition of man, probably greater than any recorded on the pages of history. There are now, many millions of horses that receive their support from the cultivated portion of the earth. On the supposition that these were diminished one half, the produce thus saved, and converted to the sustenance of man, would add to the facilities of obtaining food.

Railroads will enhance the value of property by increasing the sites for various manufactories, and thus creating more markets and nearer home. But the great benefit will consist in that general prosperity of the country, which increases consumption and creates new demands.

[Although Gov. Throop's recent message has been extensively circulated in this State at least, yet we deem the following extracts well worthy to occupy a portion of our columns. Infant schools, however, are viewed by Gov. T. too much in the light of "noble charity," rather than as forming the primary step and a true basis in a correct system of education. He leaves the impression that these schools are appropriately designed for the poor only; whereas select infant schools for the more wealthy are springing up in almost every street in our city. We think, too, he is radically incorrect, in conveying the idea that they are needed only in "our great towns." Future years will bear us out in asserting, that every village at least, requires one.]

ART. X. —*Infant, Common, and Aggricultural Schools—Colleges, and Poor Laws in New York.*

Among the preventives, as well as correctives, of crimes, may be placed many of those charitable institutions which owe their origin to the enterprise and liberality of benevolent individuals, with timely contributions on the part of the state. In these efforts, the city of New York, containing within itself, as well abundant objects of charity, as a great proportion of the population, intelligence, benevolence and wealth of the state is proudly conspicuous. The infant schools, orphan assylum and house of refuge, are among the most useful of those institutions.

The infant schools are of recent introduction, and although the means of the society are not adequate to the wants of that portion of the destitute who are the objects of their care, yet sufficient has been done to prove its exceeding usefulness. This noble charity is looked upon with great interest by those who feel for suffering humanity, and who have enlightened notions of the effects of early impressions upon the human mind. They receive into these schools the children of the poorest class of the city population, who would probably be overlooked in the great mass of human beings, and be suffered to grow up in ignorance and vice, but for that active charity which seeks to do good. Children are received at the early age of eighteen months, and taken care of during the day, while such of their mothers as are well disposed, pursue their daily labors. None but those who have witnessed the discipline of these schools and its effects, can have an adequate idea of the amount of useful knowledge which can be conveyed, by an ingenious and novel mode of instruction, into the minds of these small children. It is to be hoped that the attention of humane individuals will be more effectively directed to this subject, and that by their contributions, and suitable aid from the legislature, the amiable ladies who have these institutions in charge, may be enabled to extend their care to all who are in a condition to need it.

Benevolent institutions of this kind, properly belong to our great towns. In the country and smaller towns, individual distress becomes known, and is relieved by individual exertions; and there are not usually a sufficient number of persons at leisure, to conduct schools of this description.

A sense of the importance of common education, has been strongly manifested by the legislature, in setting apart an ample fund for that purpose. An enlightened people will not live under a government where their rights are unnecessarily abridged; and a free government cannot be maintained by an ignorant population. The enlightened mind, while it discerns the truth, looks with indulgence upon the errors of opinion, religious, political or social, which others may entertain; and in our government, where every measure depends upon the public voice, our reliance must be placed upon the general intelligence of the people, for exemption from those civil disorders which have put a short period to the duration of free governments, in whatever other nation or time they may have existed. But I need not press this subject.

The common school system is yet in its infancy; and as the attention of the Legislature will be constantly directed to it, as one of the primary interests of the State, the defects which experience points out, will in time be remedied by their wisdom. The returns for the past year shew, that school districts have been organized in almost every neighborhood in the State, amounting in the whole to 8,847; and that 8,270 have made returns according to law. Two hundred and thirty-eight new districts have been formed; and the districts which have made returns, exceed by 160 those of the previous year. The aggregate number of children over five and under sixteen years of age, in the districts which have made returns, is 468,257; and 480,325 children have been taught an average time of eight months during the year. The increase of children between the ages of five and sixteen, in the same districts, is 19,144; and the increase in the number instructed, is 12,120

The public money paid to the school districts during the past year, is $214,840. Of this sum $100,000 was paid from the revenue of the school fund; and the residue was derived from a tax upon the towns, and particular funds possessed by some of them. In addition to this amount, there has been paid in the several districts, $297,048; making a total of $511,888 paid for teachers' wages alone, in the common schools of the State.

The want of competent teachers is a difficulty which has always been experienced, and still exists. To devise a remedy, is well worthy of further efforts. The course of education might be advantageously varied under competent teachers, by introducing among the early studies of children, those elements of the

natural sciences, which are easily comprehended by means of sensible illustrations, and which impart a knowledge of things useful in agricultural and mechanical pursuits.

The great interests of agriculture and manufactures, have strong claims upon your attention. A state of the world is fast approaching, if it has not already arrived, in which it will be necessary for us to supply our wants by our own industry. International commerce will be restricted to fewer, or other articles; and our pursuits must necessarily be diversified. To increase the variety of productions, and thereby enlarge the materials for internal trade, is an object worthy the paternal care of government. Our soil and climate are adapted to the cultivation of many articles of great commercial value, which have not hitherto come within the range of agricultural operations, for want of a knowledge of the process for producing them.—The most important of these are the articles of wine, silk and hemp. They have all been partially attempted in this latitude of our country, with great success.

Among the matters of interest relating to this subject, and which promise to satisfy the desires of those patriotic individuals, who have labored to introduce more science into practical agriculture, I notice with pleasure, the dawnings of a scientific agricultural education. A school for that purpose is established in Onedia county, which has placed itself in the class of literary institutions under the care of the regents of the university. Students are there instructed in scientific and practical agriculture; are compelled to go through all its manual operations, and pay for their instruction by their labor. A principle, similar in some respects, is introduced into the polytechny at Chittenango, founded by and under the superintendence of Dr. Yates. In his school, which is designed to carry a pupil through all the sciences, he has provided for the instruction of such youth in the principles of husbandry, and other branches of education, as will volunteer to labor for their tuiton and support. It is also deserving of notice, that he has admitted the students to a share in the government of his school. He has established a minature legislature for passing laws, and courts for trying offenders, where all the forms of election, legislation and judicial proceedings are observed. The students are represented in one branch of their legislature; the faculty form an another, and the principal has a veto. A judge is appointed from among the officers, to preside in the court for the trial of offences against their laws, with an appeal from the decissions of the court to the faculty and principal.

Our state has not been unmindful of its institutions for instructions in the higher departments of literature. The revenue from a literature fund is annually distributed to our academies; and of our four colleges, three have been amply endowed. Those in New-York and Schenectady continue in a flourishing condition; and that at Clinton, in Onedia County, exhibits symptoms of reviving energies. The College at Geneva, which has received no other favor from the State than its charter, has been laboring under peculiar difficulties for the last two or three years; but hopes are entertained that it will recover, and it has at this time an increased number of students. The classical learning taught in these seminaries is a useful preparation for the learned professions, polishes and refines society, and sheds a lustre upon the country.—As its attainment is generally sought by the more wealthy, it does not need that fostering care of the government, which is indispensable to the dissemination of common learning, yet no wise government will be inattentive to its wants. I notice with peculiar pleasure the various private schools for instruction in the higher branches, established by individual enterprize, in several parts of the State. They ask no aid from the government; are generously patronised by the public; and are, for the most part, conducted by gentlemen of high characters and great literary attainments. Their multiplication and success afford evidence that the profession of teaching is taking that elevated rank in society, to which it is entitled by the importance of its duties.

Our medical colleges, established by the authority of the State, at Fairfield and New-York, continue under the care of learned and talented professors, and are rising into public estimation. At Fairfield there are now 160 students attending lectures; 138 of that number are from various parts of this State, 8 from the New England States, 9 from Canada, 3 from Pensylvania, one from North Carolina, and one from New Jersey. The whole number at New York is 117*. Under judicious regulations, and the protection of the State, there is reason to believe that the usefulness of these colleges will increase, and that they will speedily rival the most flourishing institutions in the country.

Our poor laws, originally founded upon the English system, were pregnant with all its evils. Conflicts between towns, relative to the settlement of the poor, were accompanied by expensive litigations; paupers were suffered to idle at private lodgings; and those whose decrepitude demanded care and kindness, frequently suffered from neglect and cruelty, without the means of redress.

A few years since, an entire revision of the system took place. Counties were authorised by law to purchase farms, and erect houses upon them, for the reception and employment, so far as they were able to work, of all the poor of the county. The distinction between county and town poor, and all the regulations for the transportation and settlement of the poor, were abolished. Many counties have made the experiment, and I am persuaded, that the tendency of the new regulations has been to keep idlers away from situations where they are exposed to a rigid superintendence, and compelled to work; to provide better for the sick and disabled; and to lessen very much the expense of supporting the poor. The reports, which the revised laws require the county superintendents to make to the secretary of state, I hope will present such a favorable view of the new system, as to induce the legislature at no distant day, to render the adoptoin of it imperative upon all the counties.

[From the Southern Agriculturist.]

ART. XI.—*Account of an experiment undertaken to ascertain the relative value of Corn for Seed, taken from stalks bearing one and two ears.* By J. G. A.

DEAR SIR,—As the selection of Seed-Corn appears to be now under the consideration of your correspon-

*This number is exclusive of those belonging to Rutgers Medical College.—*Ed.*

dents, I will cast in the little experience which I have in the matter.

For some three or four years, past, I have been in the habit of selecting my Seed-Corn from stalks bearing two or more ears, and I think my Corn has become more productive; *i. e.* every year there is an increased number of stalks bearing more than one ear. But in order to test satisfactorily the utility of the practice, I this year instituted an experiment on a small scale, and upon principles (so far as I know,) somewhat new.

My seed for this experiment was taken from a stalk bearing five ears, on one primary pedicle, with four secondary ones springing from it; each bearing a small well-filled ear. The seed from one of these ears was planted at the usual time of planting here, say the 1st of April, in ten rows, twenty hills long, making two hundred hills; the Corn came up well: was bit down soon after by the frost, yet none of it was entirely killed; it was ploughed and hoed only twice—this you will say was not work enough—admitted. But my object was not to force this patch of Corn to bear by superior management, but to leave it, as much as circumstances would justify, to its natural habits, and see what characteristic would be developed; and this I think the fair way fully to test and forever put to rest the question:—Do vegetables inherit the properties, inclinations, habits, &c. of their parent vegetables?

The result has amply verified, and that to my entire satisfaction, the common theory, that vegetables, as well as animals, do strongly inherit the properties and features of their parent vegetables; for in this instance, and under such poor tillage, there were not more than ten stalks out of the two hundred but what bore more than one ear.

Another part of my experiment that I believe to be new, was this: During the time my Corn was tasselling and silking, and before the ferina had arrived at that state at which the fructification takes place, I went several times through my patch of Corn, and carefully examined each stalk, to see if the shoots on it promised to perfect more than one ear, and from every one that did not, the tassal (the male bloom,) was carefully drawn, in order that the variety which produces two or more ears, might not be fructified by the ferina, from that variety which produces only one ear.

By adopting this plan, and attending strictly to these principles for three or four years, I think any variety may be obtained pure, without the least admixture of other varieties; yet it is indispensably necessary that the experiment be made remote from any other Corn, for certain it is, that the ferina may be conveyed by insects and the atmosphere to a considerable distance, and thereby get mixed.

Likewise, Sir, I made an imperfect experiment of the relative value of three kinds of manure on the same patch of Corn, to wit: Three rows were manured with hog-pen manure; three other rows with crude cotton-seed, and the remaining four with sheep-dung—of the latter, only half the quantity of the two former was applied. The manuring was performed at the first working in the furrow, each side of the hill.

A few days ago I gathered the Corn myself, and what was my surprise, Sir, to find the Corn, where the hog-manure was put, to be as light, or nearly so, as rotten corn; on the cotton-seed, it was heavier, and from the sheep-dung, much the heaviest.

I am conscious of using too many words to express but little; but, Sir, I could not say less to be intelligible.—Make what use you think proper of this, or any part thereof.

J. G. A.

[The following is from a work of Sir John Sinclair, on the Culture and Uses of the Potatoe, the principal object of which, is to prove that Great Britain, by extending the culture of the Potatoe, can be rendered completely independent of other nations for the necessaries of life.]

ART. XII.—*Mechanical and Chemical Manuring for a Potatoe Crop.*

Manures tend to augment the produce of potatoes in two ways: 1. Enriching manures, which promote the general fertility of the soil, and consequently add to the health, and to the luxuriance of the plant; these operate upon the soil, more by their *chemical* than their mechanical powers; and, 2. Where they render the soil, *in which the bulbs are to be formed*, as light and open as possible, which is found, by universal experience, greatly to augment the size of the bulb. In this case, more reliance is had upon the *mechanical* operation of the substances employed as a dressing, than on their *chemical* qualities. In this point of view, many substances are employed with good success by poor people, to augment the produce of their potatoes, that could scarcely be deemed, in the usual sense of the word, manures at all: such as twigs of young trees, clippings of hedges, small bushes of broom and furze, runts of cabbages laid in the trench where the potatoes are planted, and then lightly covered up with earth.

In order to obtain a full crop of potatoes, the skilful cultivator must adopt a practice, that shall be fitted to answer both of these purposes.

Every one knows, that the potatoes do not adhere to the *roots* of the plant, but to a particular set of fibres which push out from the bottom of the stem, which nature has provided for this very purpose, and which may be very properly discriminated by the name of *Umbilical* fibres. The fibres generally push out in a horizontal direction, often rising a little upward, while the *roots* of the plant, through which it sucks in the nourishment that sustains it, strike down into the soil below these fibres, where they branch out into various ramifications in search of food, as is common with most plants. The soil therefore, that is fitted to sustain, and to afford nourishment to the plant, and the bed in which the bulbs are to be deposited, are two things totally distinct from each other. They are connected merely by juxta position; each requiring to be possessed of qualities different, and even opposite in some measure, to what would be required in the other. For the *potatoe-bed*, light, spongy, open friability, are the qualities that seem to be the most indispensably necessary; a power to absorb and retain moisture in a moderate degree, without losing its adhesiveness and ponderosity, which are the principal characteristics of what we call a *rich* soil, are by no means requisite for the upper bed; but it is these qualities that constitute the very essence of the bed in which the *absorbent roots* are spread, and from which they are to draw the nourishment for the plant. The chief dexterity in cultivating the potatoe consists in combining these two qualities together.

Enriching manures, such as well rotted dung, (lime in some cases,) decayed animal substances of any sort, as the refuse of fish, &c. will all tend to render both firm rich loams, and light soils, more capable of encouraging the *growth of the potatoe plant;* which is the first requisite for an abundant crop of bulbs; but to dispose it to *bear kindly*, lightness of surface must also be given.

Mr. Townly, of Belfield, tried a great number of experiments, with a variety of manures, to ascertain their effects on the production of potatoes. The following were the results:

Manures.	*Produce in lbs.*	*Quality of potatoes.*
1. Stable dung covered with common yellow moss,	438	remarkably fine.
2. Sooper's waste,	383	very fine.
3. Stable dung and coal ashes mixed,	344	very fine.
4. Stable dung alone,	315	very fine.
5. Stable dung and saw dust,	307	very good.
6. Stable dung and soapers' waste,	298	very good.
7. Soot, soil and coal ashes,	271	very good.
8. Stable dung and lime,	263	tolerable.
9. Chopped furze or whins, with a covering of lime over them	256	very fine.
10. Dung of poultry and coal ashes	236	pretty fine.
11. Stable dung and lime spread over the land	230	pretty fine.
12. Coal ashes only,	211	rather small.
13. Decayed rushes and lime,	208	very good.
14. Compost of dung, lime and soil,	204	middling.
15. Salt and soil,	200	very good
16. Saw dust and lime,	197	rather small.
17. Coal ashes and lime,	192	tolerable
18. Saw dust and coal ashes,	190	very small.
19 Lime alone	187	tolerable.
20 Dung of poultry and sand,	156	rather small.
21 Bark and stable dung,	144	middling.
22. No manure.	134	very small.
23. Tanners' bark and lime,	76	very poor.
24. Bark alone,	35	very poor.

As stable dung and moss, (see No. 1,) had a decided advantage, they were carefully compared in another experiment, and the result was, a perfect equality between these two manures.

These experiments furnish some useful hints.

It is evident from No. 1, that great advantage may be derived from uniting the two descriptions of manure, namely, the *chemical*, to furnish nourishment, and the *mechanical* (as yellow moss) to promote the growth of the plant, by keeping the ground loose and open.

Lime does not seem favorable to a large produce, for stable dung alone produced 315 lbs. and stable dung with lime, only 268, while the produce of the first was very fine, and of the second only tolerable. Lime alone only 187 lbs."

ART. XIII. *On the Agriculture of England. On Manures. Convertible Husbandry and Soiling.* By JOHN LORAIN. [Continued from page 263. Vol. 2.]

As manure is a very expensive article, whether purchased, or made on the farm, the judicious application of it becomes highly important to the farmer; and as gentlemen of considerable agricultural information, have differed very widely in their sentiments on the time and mode of its application, it may not be improper to state what has been my practice and observations on it.

I have invariably applied my farm yard manure, to my summer fallow crops,* which have ever been far superior to those who have pursued a contrary practice, and the wheat, barley, and grass crops, grown after those summer fallows, without any further additional manure, I have ever found fully equal, and frequently superior, to the crops grown by my neighbours, who almost universally applied their manure immediately to their wheat and barley crops; and when their fields of those grain were poisoned with weeds, and the grasses sown over them greatly injured, from the same cause, my grain crops were clean, and much readier and sooner harvested, for it was not found necessary for them to stand exposed in the shocks, until the succulent weeds were sufficiently dried, to prevent injury from fermentation, in the stacks or barns, and the harvesting of my grasses derived equal advantage, from the same cause, in quantity and quality.

Leaves, straw, weeds, vines, cornstalks and their roots were all carefully gathered and used by me, either for littering the stalls or cattle yards. This mode of management produced a large quantity of manure, for as those substances were fully saturated with the moisture of the cattle yards, they formed a valuable compost, without the labour of heaping and turning, and in this situation, previously to fermentation, they were hauled, spread over, and immediately ploughed under the soil designed for my summer fallow crops, which were principally Indian corn and potatoes; and I am well satisfied, that as much ground may be manured in this way by one ox, as could be effected with two, if it is suffered to ferment and rot in the cattle yards, or heaped up in the fields for that purpose; and if farmers did not suffer their judgement to be biased, either by reasoning, or prejudicies imbibed from early practice, their organs of sense would supply sufficient means to determine the subject; for the sight and smell of a fermenting dung-hill, would quickly demonstrate the course that should be takem with this invaluable article, for when fermentation takes place beneath the soil, the fructifying and exciting properties of the manure are diffused through the whole mass, and nothing is lost which could have been possibly saved. You have witnessed the rapid improvement, and luxuriant crops which have been obtained on the farm (from which I have lately removed,) by this method of using manure, joined with a regular system of convertible husbandry and soiling, and are capable of judging whether I may with propriety recommend the practice to others.—Although a large share of this improvement was obtained by the addition of soiling, yet independent of that invaluable practice, (which, neither the population, capital or inclination of this country appear to favor,) convertible husbandry, joined with a regulated system of making, saving and applying manure, promises immense advantages; and every grade of soil, from blowing sands, to the most adhesive, cold, clay grounds, may be much more profitably managed, as well as sooner improved, through the medium of that practice, than by any other method which has yet been proposed.*

---

* The "summer fallow crops," are spring crops sown or planted upon a sod ploughed in, autumn or spring, and intended to be followed by wheat or barley and grass, such as oats, peas, corn, potatoes, turnips, &c.—The hoed fallow crops are to be prefered, because they best clean the ground of the weeds propagated by the manure; and because they are best calculated to consume and thrive upon the coarsest particles of the manure first given off in the process of fermentation. Indian corn, potatoes, and rutta baga are particularly benefited by unfermented manure.—ED.

* Well watered Meadows, also, grounds inaccessible to the plough, and those subject to land floods or inundations, are excepted.

Cold, retentive clay soils are not so favourable for summer fallow crops, or grain crops, as some other soils; yet even they have been frequently highly improved by that practice in England, and the crops obtained from them were much more luxuriant than they had ever produced before, under the system of naked summer fallowing; and the grass following those crops was infinitely superior to any that had ever grown previously on those lands, and as it clearly appears, that those two wide extremes of soil, are capable of being profitably managed, under a well directed system of convertible husbandry, it will be useless to substantiate the capability of improvement, in the same way, of the intermediate grades of soil;—and although first rate grass grounds, and those near cities or large towns, and superior grazing, and dairy farms, may be all profitably managed in their present state, yet if one fifth part of those lands were annually cultivated, in summer fallow crops, and another one fifth part in grain, the remaining three fifths would produce more grass than the whole, while laying in old pastures or grass grounds, provided the soil was properly cultivated, in regular succession.

The plough, in the hands of an inconsiderate farmer, may be justly considered an instrument of certain and speedy destruction, being capable of exciting the soil to its utmost efforts of fertility, which naturally debilitates and exhausts it, when nothing has been returned to renovate its powers, yet this instrument, in the hands of a judicious cultivator, who returns to the soil a due proportion of vegetation, which he can easily gather, becomes the most powerful and rapid enricher of the soil; for the more effectually it has been excited by this and other implements of husbandry, to produce luxuriant crops, the more food and litter for cattle are obtained, and of consequence, the more manure. Hence we can readily account for the great improvements which have been achieved by enterprising and intelligent cultivators, on exhausted soils. The cause of this is clear, for the strength and vigor of the plants are promoted, aud they are rendered capable of extending their roots through the soil, and gathering the nutriment which has been provided in it, for their support, and the tops also of the plants, equally invigorated by good cultivation, extract from the atmosphere with which they are surrounded, the rich nutritive properties with which it is continually charged, and the pulverized and open soil readily imbibes the enriching properties, flowing from the same source, and conveys them to the roots of the plants, with which it has been covered. Why then should the enlightened cultivators of Britian dread the effects of the plough on their grass grounds?

If the grounds which have been very recently laid down in grass, are found too tender to bear heavy stock, they may be either mown, or grazed with lighter animals, and those which are heavy turned on the grasses of longer standing.

When convertible hushandry is properly managed, much labour is saved. A summer fallow crop which will admit of regular horse-hoeing or shimming, is the first which follows after grass, the dung is spread on the sod, and immediately ploughed under, and great care should be taken that it is not turned up, and exposed in the after cultivation of crop; and for the ensuing crop, ploughing will be useles, as well as injurious, as a fine tilth, with less than half the expense, may be readily procured, without exposing the manure, by means of the scufflers or cultivators, commonly used in that country, which are very similar to the hoe, or fluke harrow used here.

The number of crops taken, before the ground is returned back to grass, should not be many, but must be, in a great measure, governed by the views and situation of the cultivator: if they are exhausting, and more than two are taken, ameliorating crops, as turnips, potatoes, peas, or clover, should intervene, and I believe there are few crops which afford sufficient shade, and produce a plentiful supply of fodder and litter for cattle, and will admit of effectual horse hoe-ing, which may not be justly deemed ameliorating, provided a sufficiency of manure has been applied to the soil.—Indian corn has ever been my favorite summer fallow crop, for if properly arranged, it affords sufficient shade, and admits the most perfect cultivation, and if the value of the grain, fodder and litter of this crop is considered, the plant may be justly esteemed far more valuable than any other that has yet been discovered; but it is a large, and very powerful plant, and when grown without manure, and the fodder stalks and roots are suffered to perish in the field, which is too often the case, it becomes a powerful exhauster, and unless it has been planted on grounds recently reclaimed from the forest, or on deep fresh bottoms, its effects on the fertility of the soil are manifest.

Soiling has been practiced with great success, and on a considerable scale, in England, by several gentlemen, whose talents are highly estimated, and they have published very accurate accounts of their experiments, which certainly were worthy much more attention, than has yet been given to them, either in that country, or any where else; for it appears that farmers are the most difficult of any other people under the sun, to be convinced of the errors which are manifest in their practice, or of the utility of the most advantageous improvements, which may be readily made in their profession, and that they believe the knowledge of their art hereditary, for they are immediately up in arms, against any person who attempts to dock the entail of ignorance.

Yours, respectfully,
JOHN LORAIN.

DR. JAMES MEASE.

ART. XIV.—*Education of a Young Farmer.—Letters from the Editor to a lady of New-Jersey.*
[Continued from page 279 Vol. 2.]

MADAM,—In my last I promised some remarks on Botany and Natural History, in reference to education.

The great respect, in which the cultivator of the soil is held, and the additional number of distinguished and learned men, who follow the plough as the road to honor, fame and usefulness, are undoubtedly to be attributed to the increased attention paid to botany and its sister sciences. These consequences of the study of science, although attended with extensive and salutary influence on the welfare and happiness of man, are of a class not discerned nor appreciated by unthinking and uncultivated minds. It requires an advanced state of society to obtain a general approval of studies, between the results of which and the coined representative of property, there are supposed to be many intermediate steps. This is the case with

the subjects under our present consideration. Propose them to an unlettered farmer, as worthy of attention in the education of his son, his response questions their usefulness. As for botany, his son already can distinguish thistles and briars, from corn and other grain; as for natural history, he knows it is time to feed the hogs when they squeal.

In casting the eye over the surface of the earth, the mind is deeply impressed with the immense number and various appearances of vegetable productions —some towering to the clouds, and others requiring microscopic aid to discover them; all having habits and qualities as varied as their number and color; affording sustenance to myriads of voracious beings; and capable of uses as multiplied as are the wants of man. When we recollect that these innumerable productions of the Almighty's hand are organised existencies, exhibiting in their members much of that complex harmony of parts, which characterises man as a being wonderfully and fearfully made, they should excite in us a curiosity not unlike that in a higher order of beings when they are said to desire to look into certain things.

Plants are furnished with a variety of organs having much resemblance, in the offices they perform, to those of the human body; certain kinds and certain proportions of food are indispensable to them. The fibrous roots have mouths into which enters this food. The sap, which answers to blood, has separate vessels for ascending and for descending. It enters the leaves, which answers to the lungs, and undergoes a change by coming in contact with the air, and then in returning, forms a part of the plant. Like the human frame, vegetables suffer by exposure, and by sudden changes in the temperature of the atmosphere. Now, if the happiness of man requires that class of people denominated surgeons and physicians, whose sole busines is to study the human system in order to prevent and cure diseases, is it incongruous to become acquainted with the organization and constitution of plants? If not, whom does this office more appropriately befit than farmers? The analogy between plants and animals is far greater than those unacquainted with vegetable physiology are apt to suppose. The study of the one is not less interesting than that of the other.

The benefits resulting from studying the nature and habits of plants, are too numerous to be pointed out in this short letter. Among them may be mentioned greater intelligence in the most important and largest class of the community, making the pursuit of agriculture correspond more to the dignity and character of the intelligent lord of the soil, increasing the attachment for "sweet home," and consequently tending to promote and secure the happiness of all that hold the plough or use the hoe.

Practical benefits have resulted from the study of physiological botany. The renewal of thrifty and fruitful peach trees in our country is to be attributed, in a great measure, to seedlings, and to new varieties, obtained by mixing the polen of different kinds. The facilities of obtaining new kinds of fruit by scions and inoculation, have been increased by a knowledge of the anatomy of plants. The benefits of this study are negative as well as positive. As an instance, he who knows that it is essential, for the healthy flow of sap, that the tree should be frequently agitated by the winds, will not, in setting out young trees, so closely confine them with stakes that they cannot be moved by the gentle zephyrs nor the northern blasts.

On this subject, I would beg leave to make an extract from one of the first Horticultural Magazines in Great Britian.

"Vegetable physiology, so far as chemically connected with the analysing of plants and soils; and a knowledge of the organic structure of the former, so far as illustrative of the radical and eperdemic functions, are indispensable in that stock of knowledge, compatible with the necessary acquirements of every well informed practitioner. The result of such information has not only a tendency to amusement and pleasure, but is highly conducive to that expansion of intellect which can account for many of the various phenomena presented to view, under our every-day practice. It also obviates many of those vague proceedings which afford scope for the censure of the connoisseur; besides exciting confusion, mingled with regret, in such individuals as witness a failure in production, aware of the effect, but there must remain, as unable to investigate the cause. It may be argued that many a good gardener flourishes at the present day, who has not only been successful in his labours, but afforded every satisfaction to his employer, who scarce comprehends the term "vegetable physiology" That such is the fact, cannot be denied; but may it not be asked, whence has this learning sprung? Is it not the result of previous philosophical experiments; a mere accumulation of approved facts, held out to the world by such as made the original investigation? But such a character never can enhance the treasures of science, and never will avail himself of any scientific research."

The following extract, from the same work, on the Importance of the study of Botany for every class of cultivators, is applicable to our present subject, and in its spirit, to this country.

"Sir,—It is well known that, in many of the humbler professions of life, a great antipathy is generally manifested to every thing which bears on its face the appearance of novelty; and this prejudice is formed without any one ever taking the trouble to examine whether the novelty, whatever it may be, is decidedly an important one, and calculated to be of essential benefit, or not. This evil spirit, for we can call it by no more appropriate name, has long prevailed in Scotland to a great extent, and has materially contributed, there can be little doubt, to retard its progress in the march of improvement. Even among our gardeners, this spirit long prevailed. The man who would have dared to change the customary working-tools, and substitute better in their place, or who adopted any new mode of treating plants, or who, in short, proposed the slightest innovation in the established mode of gardening, was, a good many years ago, regarded by his brethren as a person who invaded the sacred realms of antiquity, and brought forward his own idle and absurd fancies in place of those fixed opinions, which had been sanctioned by, and derived a sort of reverence from, the usage and custom of their fathers. Thus our gardeners were decidedly hostile to every species of improvement. The contemplation of such a picture of decided and bigoted prejudice, as was some thirty years ago, in existence, presents a degraded view of human nature; and it has been owing principally to three causes that this spirit has been suppressed. First of all, we may attribute its suppression to

the labours and exertions of the higher classes, who being fully able to appreciate the value of every new discovery, and having their minds unbiased by any such prejudices as their servants entertained, willingly gave a fair trial to every thing which promised success; and if useful, they adopted it; if not, it was rejected. But a somewhat severe task awaited the master in overcoming the prejudiced opinions of his gardener, in their place correct views and accurate judgments. This, sometimes, was difficult; and not few were those who, refusing to work on any but the old system, threw up their situations at once. The press, too, had a great effect in influencing men's minds, by giving room to free and impartial discussion, and by bringing forward the views of those whom all recognised as well calculated to examine and to judge. The example of those gardeners, also, whose minds were superior to any absurd prejudices like those of their brethren, had a great effect in influencing the rest. We now see the Scottish gardeners acknowledged by all to be possessed of a good deal of practical knowledge in their profession. This is their character in general; but some of them deserve a higher character, and to this practical knowledge unite a theoretical acquaintance with many of its more difficult and abstruse branches. Our gardeners are men of sober, industrious, honourable, and steady habits, having a taste for reading, which, in the evening, when their work is over, they frequently indulge in. Being removed, too, in a great measure, from all companionship, by the circumstance of residing on their master's property, this relish for reading and study naturally gains ground; and, hence, of almost all the humbler classes of men, we find our gardeners by far the best informed, not only with regard to their own profession, but on various subjects totally disconnected with it. Indeed, I have often been surprised at the vast store of general knowledge which many gardeners possess. I myself had one, whose talent and observation were so great, that he used occasionally to compose articles for professional magazines, some of which, I had the pleasure to see, were inserted. Such a gardener is an invaluable treasure. You may rely on it, his work will never be neglected. It is the ignorant and unlettered, in general, who are obstinate and idle.

"'Tis education forms the common mind,
Just as the twig is bent the tree's inclined."

This excellent though trite observation is here, however, very applicable, and its spirit ought to be particularly attended to. From the peculiar advantages which gardeners enjoy and the good wages which the efficient and valuable among them always receive, they possess the means, if not of purchasing books, at least of reading them at a very trifling expense. But it not unfrequently happens that books of amusement are more eagerly sought for, and read with greater relish, than works of usefulness and professional interest.—This is, no doubt, to be deplored, and there is no cure for the evil. Some gardeners are of opinion that professional reading is unnecessary, and that much more is to be learned by actual practice than by theory. Upon such men as these, remonstrances and argument will prove very likely unavailing. But I am of opinion that every master who is himself a botanist, should direct, in some measure, the education of his gardener, by lending him books, (which, indeed, may be done by every master,) by directing his attention to particular circumstances connected with particular plants, and by a thousand other modes; and there can be no objection started that this inflicts a severe task upon the master, and that his instructions will not, likely, be attended to by his servant. The observations made are not to be delivered in the dry uninteresting manner of a teacher to his pupil. Remarks made, casually and sparingly, will, if they be of any value, not fail to be remembered. I anticipate, from the increasing relish manifested by persons of every age and station, and of each sex, for the long neglected study of the vegetable kingdom, that we shall no longer meet with gardeners who have no zeal for their profession, going through its duties idly and listlessly, nor with masters who are ignorant of the names and qualities of the plants, trees, &c., in their possession. I do not know exactly what is the case in your quarter; but in Edinburgh the study of botany is prosecuted by all. Old as I am myself, and long accustomed and habituated to another profession and other thoughts, I have begun, some time since, to this delightful study, and have prosecuted it with the greatest ardour; and this is not the ardour of youth, quick, fiery, and evanescent, which can be called away in a moment, to be fixed on some more attractive object.—With the excellent *Compendium* of Sir J. Smith in my pocket, and my tin boxes slung across my shoulders, many are the rambles I have taken to Pentland Hills, Roslin, and along the shores of our beautiful Firth; and great is the good I have derived from doing so, not only in the advancement of my botanical studies, but also in strengthening and invigorating my body, and enlivening my mind. The next time you visit Scotland, Mr. Editor, and happen to be in Edinburgh, you must see my Hortus Siccus, which, I flatter myself, is worth looking at: and here I may be allowed to observe, that although it is not so much the province of the gardener as of the botanist to gather a Hortus Siccus; yet, in my humble opinion, no gardener should be ignorant either of the proper time and season for collecting specimens, what parts of plants should, in preference to others, be selected, or of the manner of drying and preserving the specimens when collected. The desire which every one who pretends to even the slightest botanical knowledge, now feels to collect a herbarium, points out the necessity of this additional knowledge being acquired by all gardeners; and, as the labour and study are not great, nor of long continuance, less excuse can be pleaded for ignorance."

For the consideration of the latter subject proposed in this letter, I would claim your indulgence for the next opportunity, particularly as I have made a heavy tax on your time in reading this.

ART. XV.—*Letters from a Gentleman on a Tour through the Middle and Western States.* [Continued from page 292, Vol. 2.]

Washington, D. C., June 15.—We found the president's house better furnished than we anticipated. The furniture was mostly French manufacture, which is excusable, inasmuch as France was our ancient ally. It has been too often and minutely described, to require a description from me. The public offices in the vicinity of the Presidents house, appeared to be well arranged for the convenience of all parties. We had but little time to examine them, but the correct

maps, &c. taken from actual survey of several parts of the United States, which we saw in the land office, were beautifully executed. The patent office occupied part of a day, and we left it very reluctantly; it would require quires of paper, to describe the various models there deposited, and their uses. We were particularly pleased with I. Towns' model of a bridge, which we think will soon be generally adopted where wooden bridges are wanted. We were told two had recently been erected on the Merimac River, in Mass., which give the highest satisfaction. We leave here to-morrow for Wheeling, Va. via Fredericktown and the Cumberland road across the Alleghany mountains and will write you on our arrival.

Wheeling, Va.—After leaving Washington, we passed through a very good tract of country until we arrived at Fredericktown, Md. which is a place of considerable trade, and prettily situated. Our ride from thence to this place has been very fatigueing, no time being allowed for rest, one passenger nods in this direction, and one in that, and occasionally, when heads come in *contact*, the sensation is far from being pleasant.—We had a most magnificent view from Laurel Hill, as it is called, one of the Alleghany mountains; we were on its summit, just as the sun arose, and the view was, indeed, splendid. We found some parts of the road almost impassable, so cut up by the loaded wagons. At other places, where they were repairing on the M'Adam principle, they were fine.

We intend going to Cincinnatti by land, taking Zanesville, and Chillicothe in our way, when we will write you our opinion of Ohio land, &c. As for this place, (Wheeling,) it appears to be very flourishing, and we have no doubt will continue so. There are many stores here, and every thing appears new and cheerful: but a few years since, this was a forest, now, any article of merchandise contained in any of the cities of the United States, can be procured here; the Ohio is low at present, but still is a handsome river: when at its height it must be splendid; the banks are very steep, and opposite the town are paved.

ART. XVI.—*List of Articles for Premiums, for* 1830, *from the New-York Horticultural Society.*

The Committee appointed by the New-York Horticultural Society, to prepare a list of articles for which premiums will be given, report the following:—

FRUIT.

Grapes—For the two best bunches of white Grapes; two do. do. blue, black, or red do.; two do. do. native do.

Peaches—For the six best early freestone Peaches; six do. clingstone seedling do.; six do. late do.

Nectarines—For the six best freestones; six do. clingstone do.

Apricots—For the six best Apricots.

Plums—For the six best green gage Plums; six do. Plums of any kind of gage; six largest do.; six of any fine variety.

Pears—For the six best summer Pears; six do. winter do.; for a new seedling do.

Cherries—For the best pound.

Gooseberries—For the best dozen.

Currants—For the best quart new variety, or superior size.

Raspberries—For the best quart superior sorts.

Strawberries—For the best quart superior sorts.

Melons—For the earliest fine framed Musk Melon.

Mulberries—For the best table Mulberries.

VEGETABLES.

Frame Cucumbers—For the earliest brace framed Cucumbers, raised not later than the last Tuesday in April.

Eggs (Melongena)—For the two finest.

Beets—For the six earliest Blood Beets.

Peas—For the best quart in pods early Peas.

Beans—For the earliest quart in pods kidney Beans; do. earliest and best half pint shelled Lima do.

Cauliflower—For the best two heads early Cauliflowers; do. two do. full do.

Broccoli—For the best two heads capo Broccoli; two do. any other kind do.

Cabbage—For the best two heads earliest Cabbage.

Sea Kale—For the best bunch.

Asparagus—For the best and earliest forced Asparagus.

Lettuce—For the best two heads cabbage Lettuce; two do. cos do.

Celery—For the best six heads Celery.

FLOWERS.

Polyanthus, Auriculas, Hyacinths, Tulips, Ranunculus, Anemonies, Carnations, Pinks, Piccotees—For the best twelve.

Roses—For the best twelve.

Bouquets—For the best and most tasty Bouquet during the season, from the open ground, $5; do. do. from the green house, $5.

The Committee recommend that notice be given from time to time, as to the days when exhibitions of various kinds of flowers, or early vegetables, shall be shewn for premiums, as the season advances.

Discretionary premiums will be awarded for vegetables, flowers, or fruit that may be deemed rare, or of superior excellence in kind or quality.

THOS. HOGG, Chairman.

By order of the Society—

WM. R. COOKE, Secretary.

New-York, Jan. 26, 1830.

ART. XVII.—*Importation of Foreign Plants.*

Col. Carr, proprietor of the Bartram Botanic Garden, near Philadelphia, has just received, through the agency of Mr. James Ronaldson, a valuable collection of plants of the south, transmitted from Mexico by the Hon. Mr. Poinsett, and our worthy townsman, Professor Keating. This collection embraces fifty species of the *cactus*, a genus distinguished in all its varieties from every other tribe by the most striking and interesting characteristics. Col. Carr, having made his selections of a plant of each species, in accordance with the request of the donors, the residue will be sent to some other botanic establishment.

This Liberal donation will be a valuable addition to the extensive collection at the Bartram Garden, and will give a new attraction to an establishment which previously possessed so many claims on the attention of the lovers of Botany.

How much might our public agents abroad aid the cause of the natural sciences in this country, by

giving a small portion of their attention to the subject!

Mr. Prince, proprietor of the Linnæan Botanic Garden, at Flushing, L. I. has also received from the same gentleman, an extensive collection of the most valuable trees and plants of the Mexican region, including those that are natives of the highest mountains. Among which are comprised the whole of the Cactus family as far as it was possible to be obtained; the far famed Cheirostemon platanoides or hand flower tree; three *ever-green* species of the oak, with beautiful and peculiar foliage—the Fuschsia arborescens, with large laurel like leaves; the Cestrum nocturnum, or night smelling jasmine; Bignonia jasminifolia, stated by Mr. Poinsett to be one of the most beautiful climbing plants in the world; Passiflora ligularis, or large Mexican Granadilla, with eatable fruit; Richardsonia laurifolia; Zephyranthes carinata, rosea, and candida, Mammea americana, or Great Mamee apple; Laurus persea, or Alligator pear; Montanoa arborescens; Hibiscus rosa montana; several magnificent species of Armaryllis, Crinum, Pancratium, and Bignonia; the very singular scarlet leaved Euphorbia; several species of Asclepias and Echites; the round fruited Calabash tree, or Cresentia; several original species of the Dahlia; black flowering Gonolobus; the Montezuma rose, and the red and white Mexican Rose trees; several beautiful species of Acacia and Mimosa; the Mexican Schinus, which adorns the road sides, and whose branches are pendant like those of the weeping willow, and are loaded with scarlet fruit; Stevia alba, and various other objects calculated to elicit the greatest interest among Botanists and horticulturists.

ART. XVIII.—*New Publications.*

Practical Instructions and Directions for Silkworm Nurseries, and for the Culture of the Mulberry Tree. By FELIX PASCALIS, M. D. Pages 104. The second volume of this work contains, Abridged Precepts of the Old and Natural Method of Rearing Silkworms; Description of the Buildings appropriated to the Rearing of the Silkworms during all the Different Ages; Comparative Remarks on the Old and Recent Precepts for the Management of Silkworms; American Method of Rearing Silkworms; Foreign and Domestic Publications on Silkworms and the Mulberry Tree; Foreign Intelligence and Correspondence; Domestic Intelligence.

Under the above general heads, are embraced a great deal of information, particularly on the application of artificial electricity to the rearing of Silkworms, that cannot fail of being interesting and useful to all concerned in this subject, the importance of which is every day increasing.

Conversations on Vegetable Physiology, comprehending the Elements of Botany, with their practical Application to Agriculture. By the AUTHOR of "Conversations on Chemistry," "Natural Philosophy," &c. &c. New-York, 1830. G. & C. & H. CARVILL. 12 mo. pages 354.

The author of this work is a lady. Almost every parent would find this a useful book to be read by all members of his family. Free from technicalities, it will be found a pleasing companion for a young lady, calculated to enlarge the views and cultivate an admiration for the works of nature. Farmers, too, will obtain many salutary admonitions and important directions.

In looking over the work cursorily, we discover a number of typographical inaccuracies in the letters illustrating the plates. The engravings, designed to be colored, are, uncolored, altogether too faint for a book of instruction for youth. Scientific books for schools above all others, should be perfectly correct and clear.

ART. XIX.—*Description and Drawing of the* CAMELLIA HOSACKIA, *a seedling raised by Michael Floy.*

At the meeting of the New-York Horticultural Society, on the 17th day of January last, Mr. Floy, V. P. H. S. presented his seedling Camellia, No. 8, which, in compliment to the esteemed Patron of the Society, has received the specific name ***Hosackia.*** It is a very large and double flower, of a rich scarlet color, and was greatly admired by all who saw it.

We feel much pleasure in calling this magnificent flower an American seedling; and believing that nothing would be more acceptable to our readers, we have procured a cut of it for this number of the Repository, from a drawing made by Miss Manley of this city. The engraving is on wood, by Mr. Mason, who has recently arrived in this country, and whose style of execution will not fail of giving the best of satisfaction. We have been favoured by Mr. Floy, with the following

DESCRIPTION.

"CAMELLIA HOSACKIA is No. 8 of my seedlings, and is undoubtedly the best of all the red Camellias I have seen.—The flower is large, measuring four and a half inches across the petals which approach in color very nearly to a bright scarlet. The flower opens regularly and evenly, expanding quite flat in the manner of the old Double White, and continues a long time without dropping off; and never falls off in a body like the Warrata, and its varieties. The flower is completely double, and shows neither stamina nor pistilla. The plant is at present, nearly five feet high and has produced a dozen flowers this season.

It was raised from a seed of the old Double Red, sowed in the spring of 1823. It flowered for the first time in 1827, and owing to the thriftiness of the plant, and the rapidity of its growth, has not not flowered since, until now. It may be worth noticing, that the pod, or capsule, from which this seed was taken, had five perfect seeds, four of which produced plants that have borne *single flowers*, and are consequently worthless, except as stocks on which to graft other varieties. A more remarkable occurrence, however, happened with the seeds whence I obtained *C. Clintonia*, figured in your last number. It was raised, as I informed you, from a seed of the *C. Warrata*, impregnated with the *variegata*. The capsule produced four perfect seeds which vegetated, from one of which was produced the *Clintonia;* from another, my No. 6, which flowered in 1828, is double, of a fine pink, or rose color, and promises to be a handsome and very distinctly marked variety. It is remarkable for the size of its leaves, which are larger than any variety with which I am acquainted: of the third plant raised from this pod, the foliage is as re-

markably small, being long and narrow, and somewhat resembling the leaves of a willow. This variety has not yet flowered, although, from my anxiety to see what kind of a flower it would produce, I inarched a plant from it six years ago. It has been facetiously styled by some of our Horticulturists, *Nunquam Floras*. Time, however, will test the correctness of this appellation.

ART. XX.—*Miscellaneous.*

Queries on Potatoes.—The hints in the last Number of the New-York Farmer, I should be pleased to comply with, but I am entirely too ignorant as a farmer to offer any thing at present but questions. The first of which was suggested by perusing Art. 174, Vol. 2. J. B. says, "that the large ox noble yielded only 14 per cent., the small kidney variety gave about double, or nearly 28 per cent. of nutricious matter." I would ask 1st, did both these species appear alike when cooked, boiled, or steamed? Were both mealy, or waxy, or not, or if there was any difference, and if any, what was it, and with which did the nutricious matter preponderate? The result of J. B's. experiment is stated without giving any reason for that result, we, therefore, know not which would be best to plant. I believe it is often the case, potatoes of the same crop and species, differ very much in their quality when prepared for food, and I should be much pleased to know the difference between those, which when boiled are mealy, and those which are not, in their nutritious properties. I have been informed by farmers who have noticed the fact, that hogs can distinguish at once a potatoe which is sweet and mealy when boiled, from one that is wet or bad tasted, and when mixed in a raw state and thrown to them, will always select and consume the mealy potatoes first —does this arise from the potatoe which boils mealy, being more nutricious than the other, or that it has a different flavor only? Do not all varieties of Potatoes under like cultivation produce nearly equally in weight and measure? We have here a variety called Pink eye'd, or Methodist potatoes, which is generally thought to produce badly, but is still much cultivated for its quality; but a farmer informed me he had this year raised, of this variety, from 300 to 400 bushels per acre, on new land without manure, which is certainly all that could be expected of any variety. I purchased some of them, found them of fair size, universally sound and as good as I have ever eaten in this country. I shall this year give a fair trial to three varieties, and if worth while, the result shall be made known to you; mean time, I should like to know the results of any experiments throwing light on the above queries, if any have come to your knowledge. What is the relative proportion of nutricious matter contained in Ruta Baga, Mangel Wurtzel, Altringham Carrot, Pumpkins, and Indian corn? An answer to this, I think, will throw aside many difficulties in the way of a correct reply to Mr. S. Reynolds, (Art. 170, Vol. 2,) as to the most economical mode of fattening sheep and swine, which is, unquestionably, a matter of great consequence to a farmer. Very respectfully,

Oswego, N. Y. 1830. H. P. H.

Lin. Botanic Garden, Dec. 21, 1829.

Aracacha.—Seeing the notice of the Aracacha by our worthy fellow-citizen, Dr. Samuel L. Mitchill, I have to state that this interesting plant is flourishing at my establishment, and that I have cultivated it successfully for several years, and have transmitted many plants to Europe, and some to the southern states, &c.

Yours very respectfully,

Editor of N. Y. Farmer. WM. PRINCE.

Mildness of the Winter.—We have had very little frost the last fourteen days, not so as seriously to interrupt farming. I have planted many trees, ploughed, and sowed grain, &c. New-Years day, I plucked, in the open ground, flowers of the hearts-ease, and Flos adonis; and to-day, in hoeing and weeding my strawberry bed, discovered a fully expanded flower upon one of the stools. Very respectfully,

Albany, Jan. 4, 1830. J. B.

Rearing Poultry.—From an interesting communication in the *Southern Agriculturist*, by a lady, we gather the following directions. Poultry of a middling size and black color are the best. Fowls too fat do not lay abundantly. No profit in raising fowls if you have to buy grain. They should be fed early in the morning, and about sun-set. Regularity of feeding both in time and place, is of great importance. Cleanliness, and shelter from storms and winds, are essential to the health. Clean water is a preventive of the pip. The fowl-house should be often cleansed and perfumed with herbs. Straw, in the nest, changed every ten or fifteen days. Hay is better than straw, not so liable to breed vermin. Ashes and sand should be convenient, where they might roll, and trim their feathers. To make them lay in winter, they should be shut up in a warm place. Boiled potatoes and turnips are cheap and good food. Melons and salad are refreshing in summer. Young hens should be put to sit in a quiet place. Eggs may be preserved by a coat of varnish, by pouring over them warm mutton suet so as to fill up the cavities between them, by surrounding them with a paste of ashes and strong brine, or by immersing them in water, containing a solution of salt and lime. When sitting, hens frequently require fresh and clean water.

Cause of Decay in Peach Trees.—A writer in the *Trenton Federalist*, planted a peach orchard in 1820, which, for five or six years, grew thriftily. The second crop of fruit seemed to have exhausted it; and on the following year, "the roots were replete with worms, and in many instances they had completely girdled the principal ones." He does not believe the decline of peach trees is caused by worms. He supposes that the roots of peach trees in a healthy, vigorous, and fruitful state are unpalatable to worms. By applying half a bushel of oyster shell lime and tar, in equal proportions, immediately round the trunk, a few inches under the ground, he has restored his trees to the health and thriftiness they were in when three years old; and for the last four years he has had fine crops.

Manufacture of Silk.—A silk factory has been established at Dedham, Mass., by Edward Brown, who served a regular apprenticeship at the business in London.

Georgia Silk.—In the Gentleman's Magazine, Vol. XXIII, October 26, 1753, is the following:—

"The state of the colony of Georgia, was taken into

consideration, at a board of trade and plantations, and it appeared that the colony produced upwards of £17,000 ($75,555) worth of raw silk, since January, 1752, besides what is not yet come to the notice of the board."

Plants raised by subdivision.—The grape from a natural vine, has five seeds, but from a slip, has but two. Some vines, raised by the last method, lose the seeds entirely. The less number of seeds, the more rich the juices. Apples and oranges having the least number of pips are generally the highest flavor. The sugar cane propagated by division loses its seeds. This is the case with the succulent plants of the Cape of Good Hope, after having been for a number of years transplanted in Europe. A grafted tree will bear fruit sooner, but later in the season than a seedling. The walnut grafted on a walnut, buds a fortnight later.

The Weeping Willows now in Europe, are all supposed to be subdivisions of one tree, originally brought from Asia.

Transportation of Pollen and Sea-water by the wind.—The Neapolitan poet, Pontatus, has celebrated the praises of two remarkable palm trees. One was situated at Otranto, the flowers of which had no stamens; the other, at Brindisi, had no pistils, consequently neither could bear fruit. After the growth of many years, they overtowered the highest of the neighboring trees and houses. Although forty miles apart, the pollen of the tree at Brindisi was wafted by the wind to the pistils of that at Otranto, which, to the astonishment of all, bore fruit! That such light substances as the pollen of flowers should be carried by the wind this distance, is not incredible when we recollect that the water of the ocean is, perhaps, carried as far. In very violent gales, the salt-water of the Atlantic ocean has been known to cover the windows of houses on the North side of Long Island, a distance of ten or fifteen miles, so thick as to render it necessary to wash off the dried salt after the storm. Plants, too, have been injured by the quantity of salt lodged on them.

Profits of a Mulbery Orchard.—Mr. A. Parmentier, in the *Silk Culturist*, calculates the net profits on an orchard of two acres, at 20 per cent. for the first nine years, 47 per cent. for the five following, and 112 per cent. for the succeeding six.

Fitness of our American Climate for Horticultural purposes. [Letter from William Wilson, to Samuel L. Mitchill, dated New York, Jan. 1. 1830.]

Dear Sir,—I believe you are aware of the very favorable opinion, which I entertain of the very superior congeniality of this climate, for the production of every valuable article of horticulture; and were this opinion founded only on theory, those writers, (who have asserted that our garden crops are burnt up by the heat of the sun in summer, or frozen to death by the rigor of winter,) might have some grounds for an assertion, which the actual products of even my horticultural labors refute. The state of my garden crops &c., you did me the favor to examine last summer, which was the nine and twentieth return of that season, in which I have been employed in cultivating a garden in this vicinity. I believe I am not, therefore, charged with rashness in promulgating my sentiments on the subject: but besides, I can defy those who are opposed to me in opinion, to produce one single sentence which I have published in favor of this climate, that cannot be substantiated by the actual results of my own labours. I have never had any difficulty in retaining a good supply of broccoli in a flowering state for a number of winters past, and I have this morning availed myself of the pleasure of presenting you with a few heads of broccoli, just taken from the plants growing in the open ground of my garden at Murray-Hill. Most respectfully yours

William Wilson.

Land in Michigan.—Mr. Lyon has completed a survey of the tract of land ceded to the United States by the treaty of the 20th of September, 1828, bounded on the north by the St. Joseph's River, on the north-west by Lake Michigan, and on the south by the north boundary of Indiana, equal in area to about 300 square miles. This is the first tract that has been surveyed in this territory on the border of Lake Michigan, and is represented by Mr. Lyon as generally good—surface rolling, and thickly wooded with beach, sugar tree, ash, elm, oak, and walnut. The river Gaillain and Pine Creek are, next to the St. Joseph's, the principal streams. On the former, there is said to be much excellent land. The banks of the lake are generally sandy, from thirty to seventy feet in height, and from their sterile appearance, calculated to give the traveller who journeys by water, an unfavorable opinion of the land in the interior. Several gentlemen are now engaged on the St. Joseph, Pawpaw, and Black Rivers and will survey between thirty and forty townships the present winter; and it is expected, the whole country south of the base line, and east of Lake Michigan, which is not already in the market, will be offered for sale next June.—*Detroit Paper.*

Modesty of the Wise.—A French writer remarks that "the modest deportment of those who are truly wise, when contrasted with the assuming air of the young and ignorant, may be compared to the different appearance of wheat, which, while its ear is empty, holds up its head proudly, but as soon as it is filled with grain, bends modestly down, and withdraws from observation."

Manual on the cultivation of Sugar.—Jan. 13.—Mr. Spencer, of New York, from the Committee on Agriculture, reported the following resolutions:

Resolved, That the President of the United States be requested to cause to be procured, through the commanders of the public armed vessels, and our ministers and consuls abroad, such varieties of the sugar cane, and other cultivated vegetables, grains, seeds and shrubs, as may best be adapted to the soil and c mate of the United States.

Resolved, That the Secretary of the Treasury cause to be prepared a well digested manual, containing the best practical information on the cultivation of sugar cane, and the fabrication and refinement of sugar, including the most modern improvements; and to report the same to the next session of Congress.

Fine White-Wash—The Baltimore Patriot gives the following directions for making liquid Plaster of Paris:—Into a common barrel half full of whitewash, put one ounce of sulphuric acid largely diluted with water, stir them together, then apply them to any work as common white-wash is applied. This coating is an artificial gypsum or Plaster of Paris. The coating thus formed is whiter, harder, more adhesive, and very little more expensive than common white-

wash. It forms a better protection of wood from fire than compon white-wash. The conjecture which occured to the writer that such would be the case, having been reduced to the test of experiment this summer in Quebec, has completely succeeded.

Curious fact in Natural History.—The large snails which are found in gardens and woods, discharge a whitish substance, with a slimy and gelatinous appearance, which has been known to cement two pieces of flint so strongly, as to bear dashing on the pavement without the junction being disturbed, although the flint broke into fragments by fresh fractures.—*Anon.*

Sheet Caoutchouc.—A specimen of sheet caoutchouc has been sent to the editor, by Dr. I. K. Mitchell, of Philadelphia. Dr. Mitchell's process is as follows: Steep a bag of caoutchouc in sulphuric ether until quite soft, say from four to twelve hours, or any longer term. Take it out and quickly attach to its neck, by a flat string, a stop cock, and inflate with the mouth. This process succeeds best in a cold room. When well prepared, the balloon will rise with hydrogen, by means of which it should, for such a purpose, be inflated. Cake caoutchouc soaked in ether until soft, is easily cut with a wet knife, or under water, and may thus be made as thin as required. By soaking in ether for some days, massive caoutchouc may be moulded by hand into any shape whatever, and is nearly as manageable as dough. Dr. Mitchell has also discovered that essential oil of sassafras will dissolve caoutchouc readily after being softened in ether, and that after evaporation of the solvent the caoutchouc remains unaltered. The very various uses to which both may be applied need not be insisted on. When two pieces are laid together and cut with scissors, they unite at the line of section.—*Sill. Jour.*

The most expeditious method of obtaining Grapes. The quickest method of procuring grapes, is to graft into the body, near the ground, or which is preferable, into the roots of large vines. In the following year, if the graft has taken, fruit will be produced. Thus every farmer, who has wild vines on his grounds, may, by procuring cuttings of hardy foreign or native kinds, and paying a little attention to the grafting and training, be soon and amply supplied with grapes for market or wine making.

Productive Farm.—We understand that the following is the amount of produce raised on a farm of forty eight acres in the vicinity of the city of Boston, (forty-eight acres excluding building grounds.)

31 tons of English hay.
A small lot of Lucerne valued, (cut green for fodder,) five dollars.
300 bushels potatoes.
417 " beets.
450 " mangel wurtzel.
886 " or 21 tons carrots.
Pasture for 14 cows 9 weeks, (aftermath.)

222¾ bushels barley.
900 " onions.
100 " parsnips.
1000 cabbages.
600 bushels turnips.
2½ tons squashes.
Cash received for vegetables $306,64.
Amount used in a large victualing concern, $175,00.
Celery on hand, valued at $5.—*N.E.Farmer.*

White Maize or Indian Corn of China—It is stated in the annals of the Horticultural Society of Paris, that the white maize (Indian corn) of China, although it produces a smaller grain than the maize of Pennsylvania, which has been hitherto much cultivated in France, yields more abundantly, and gives a much finer flour. Some Chinese maize, sown in the south of France during the present year, is stated to have turned out very well, notwithstanding the badness of the season.—*Lit. Gazette.*

Onions.—During the last season there was raised at Flatbush, in the garden adjoining the Academy, and in charge of Mr. Kellogg, forty bushels of onions on the twentieth part of an acre of ground, being at the rate of 800 bushels to the acre. This fact was witnessed by all the neighbors, and is a strong evidence of what may be accomplished by good husbandry.—*Long Island Star.*

Raising Peas in France.—I do not recollect to have seen our method of cultivating early peas practised in England. The market-gardeners place their rows east and west, and raise a little ridge of earth on the north side of the row, which protects them from the north winds, and receives, at a more powerful angle, the sun's rays; by which more heat is reflected on the plants in the day-time, and at the same time more absorbed, to be radiated on them at night. When the plants show their second blossom, the top is pinched off, which throws the force of vegetation upon the forming pods, hastens the maturity of the crop, and increases the size of the peas. The operation is called *chatrer.* The crop is generally removed by the end of May, after which mangel wurtzel is frequently sown; but sometimes rows of potatoes are planted between the rows of peas. Turnips round Paris are generally sown after winter barley, which is put in the ground early in autumn, and the crop cut green for cows, in March, April, and May. Madame la Comtesse de Bruce is dead, and her place and extensive collection of plants are now to be sold. *Gardener's Magazine.*

Melons.—A writer in the Richmond Enquirer, with the signature Agricultor, says, "I now from a small spot of poor ground, raise the greatest profusion of melons, whereas, until lately, I could not raise enough on four or five times the same space of rich land. I dig square holes ten feet apart, each way, for watermelons, and about six feet for muskmelons; for the first, two feet deep, for the last, eighteen inches deep, and eighteen inches wide. The roots run but a short distance in a horizontal direction, but striking deep into the earth, they are secure from the effects of drought; and by filling the holes half full of manure, and finishing them to a few inches above the surface with a mixture of manure and soil, or which is better, a composition of vegetables, and other substances, commonly to be met with around out houses and pig pens, a depth of soil, of fine and light tilth is formed. I have not attempted to raise pumpkins in this way, but have no doubt that it will answer for them."

The same plan may be adopted with advantage and economy, as to manure, in raising Lima beans, especially in cold situations.—*Penn. Agric. Almanack.*

Transplanting Shrubs in full growth.—Dig a narrow trench round the plant, leaving its roots in the middle in an isolated ball of earth; fill the trench with plaster of Paris, which will become hard in a few

minutes, and form a case to the ball and plant, which may be lifted and removed any where at pleasure.—*French Paper.*

Acorn Squash.—S. Reynolds, Esq. of Montgomery, N. Y. gives the following account of the Acorn Squash, in a letter to G. Thorburn and Son.

This plant certainly deserves the attention of every gardener. It is a great bearer, and the fruit is large and valuable. The meat is finer, sweeter, and makes a more delicious pie than other pumpkin, and keeps good much longer. I have had them quite sound in February. But that which renders them so eminently useful for garden cultivation, is, they never fail to prove an effectual bribe for the yellow bug which so often destroys our early planted cucumber and melon plants.

This squash has a very large and succulent seed leaf, and if their seeds are planted liberally with the cucumber and mellon, the insect prefers feeding upon them, and wholly neglect the other.

For a number of years past, I have protected my chosen plants from the depredation of this hungry foe by this cheap and simple expedient, and can therefore with the utmost confidence recommend it to others for the same beneficial purpose.—*N. E. Far.*

Diseases of Plants.—Fortunately, the diseases of the vegetable kingdom are of a less complicated nature than those of animals.

The diseases of plants may be ranged under six different heads;—

1. Constitutional diseases.
2. Diseases arising from light, heat, water, air, and soil, improperly applied.
3. Diseases arising from constitutions and external injury.
4. Diseases occasioned by the action of animals on plants.
5. Diseases proceeding from the action of vegetables on each other.
6. Diseases arising from age.

Variegated or party-coloured leaves, such as those of the box and the holly, are classed as constitutional diseases. They arise from certain juices of plants, which, from some unknown cause, change their nature, and thus affect the colour of the leaf. These changes are preserved if the plants are multiplihd by subdivision, and even sometimes continued when propagated by seed.—*Veg. Physiology.*

Transplanting young Trees.—In transplanting young trees, the more they are lopped, the more certainty there is of their living; and nursery-men who usually supply them, and warrant their taking root, make no scruple to amputate both head and branches. In transplanting trees into the Botanical Garden at Geneva, the branches are never lopped, and only about five per cent die: yet the chance of their perishing must greatly exceed that of common transplantations, as the trees come from foreign climates, and are placed in a soil and temperature more or less unsuited to them; beside which, they have undergone the confinement of packing, and the fatigues of a long journey. It must, however, be acknowledged, that the art of packing and conveying plants is highly improved; for M. de Candolle frequently receives plants, not only in leaf, but in full blossom. If, however, gardeners will persevere in this system of lopping, they should at least do it with moderation and judgement. Young trees, raised with a view to transplantation, should never be allowed to grow so thickly, as to interfere with each other; it is the duty of a nursery-man to transplant them in his own grounds, in order to give them space, if he has not a market for them elsewhere. —*Ib.*

Transplanting Large Trees.—Sir Henry Stewart of Allanton has, within a few years, introduced a mode of transplanting large trees, which appears to have been attended with great success. It is founded on the same principle of guarding the roots from injury: with this view, instead of carefully covering up the roots, he lays them bare, but he separates the earth from them with such extreme precaution, that not even the smallest fibres are injured: this is done by labourers, whom he calls pickmen; because their business is to clear the roots from the earth by means of a small instrument adapted to the purpose, or with their fingers: a ball of earth is left close to tha steam with the sward upon it. An engine is then brought up to the tree, consisting of a strong pole mounted upon two high wheels; the pole is strongly secured to the tree, while both are in a vertical position, they are then brought down to a horizontal one, by the pole acting as a lever; and by its descent, the few central roots, which the pickmen could not reach, are rent from the ground.

The tree is so laid on the machine as to balance the roots against the branches, and one or two men are placed aloft among the branches of the tree, where they shift their places like moveable ballast, as occasion may require. Both roots and branches are tied up. The pit for receiving the tree, which should be prepared a twelvemonth before, is now opened, and the tree set in the earth as shallow as possible. The roots are then loosened from their bandages, and divided into their tiers, or ranks, in which they grow from the stem; the lowest of these tiers is then arranged, as nearly as possible, in the manner in which it lay originally, each root with its rootlets and fibres being imbeded in the soil with the utmost precaution, the earth being carefully worked in by the hand and the aid of a small rammer; additional earth is then gradually sifted in, and gently kneaded down, till it forms a layer, in which the second tier of roots is extended in the same manner as the lower tier, and so on till the whole are covered with earth. This attention to incorporate each fibre of the roots with the soil not only answers the purpose of inducing the roots to recommence their functions of absorbing sap, but also serves to fix them firmly in the soil, and renders stakes, ropes, and other means of adventitious support unnecessary.—*Ib.*

Rural Amusement for Old Age.—I deem it very important to provide *amusements* for old age; and to a garden where the pursuits of the florist and the botanist may combine, I look as the source of the purest and most untiring pleasure. In regard to culture, I have much to learn, and many plants are wanted which I know not where to find.

Editor N. Y. Far. D. T.

Kelpwort.—During the recent wars of France, it was found that kelpwort, on the side of hills facing the sea, would arrive at full maturity; but on the opposite declivity, although it would grow, yet no soda could be made from it. Now as fresh water only is evaporated from the ocean, why did the former produce soda and the latter none?